

STORMWATER POLLUTION PREVENTION PLAN

Heavy Equipment Maintenance, Storage
Yards, and Material Storage Facilities

City of Duvall Public Works Department

In Compliance with the Washington State Department of Ecology
Phase II Municipal Stormwater Permit (Effective 2015)

City of Duvall
Public Works Department

Original copy	<input type="checkbox"/>
Training copy	<input type="checkbox"/>
_____ Facility copy	<input type="checkbox"/>
Other	<input type="checkbox"/>

March 2016 Update

TABLE OF CONTENTS

1.0	Background And General Requirements	1
1.1	Objectives Of The Swppp	1
1.2	Npdes Permit Coverage	2
1.3	Integration With Other Coverage	2
1.4	Swppp Availability	2
2.0	Facility Assessment	3
2.1	Operations At Public Works Facilities	3
2.2	Vicinity Map And Site Drainage Plans	4
2.3	Receiving Waters And Wetlands	4
3.0	Areas Associated With Permit-Covered Activity	4
3.1	Activities In The Area	4
3.2	Pollutants	4
4.0	Historical Spills And Leaks	6
5.0	Monitoring Plan	6
6.0	Illicit Non-Stormwater Discharges	6
7.0	Schedule For Implementing Additional Or Enhanced Bmps	7
8.0	Bmps For Compliance With The Npdes Permit	7
9.0	Operational Source Control Bmps	7
9.1	Required Citywide Bmps	7
9.2	Formation Of A Pollution Prevention Team	9
9.3	Reporting And Recordkeeping	10
9.4	Inspections	10
10.0	Source-Specific Structural Source Control Bmps	10
11.0	Treatment Bmps	12
12.0	Flow Control Bmps	12
13.0	Erosion And Sediment Control Bmps	13
14.0	Operation And Maintenance	13
15.0	Handling And Disposal Of Solid And Liquid	14
16.0	Concluding Statement	14
17.0	References	14

TABLES

Table 1. Addresses and points of discharge for the Maintenance Shop and Public Works Building Complex.	4
Table 2. Pollution-generating activities, potential pollutants, and relevant BMPs at Maintenance Shop and Public Works Building Complex	5
Table 3. Pollution prevention team for the Maintenance Shop and Public Works Building Complex.....	9
Table 4. Pollution-generating activities, existing BMPs, and corrective actions for the Maintenance Shop.....	11
Table 5. Pollution-generating activities, existing BMPs, and corrective actions for the Public Works Building Complex.....	12

APPENDICES

APPENDIX A	Public Works Department Stormwater Pollution Prevention Plan
APPENDIX B	Public Works Department Spill History and Spill Reporting Form
APPENDIX C	Public Works Department Stormwater O&M Requirements Table
APPENDIX D	Public Works Department Annual Inspection Forms
APPENDIX E	Spill Prevention Plan
APPENDIX F	Source-Specific Operational and Structural Source Control Best Management Practices (BMPs)

Stormwater Pollution Prevention Plan Certification

I certify under penalty of law that this Stormwater Pollution Prevention Plan (SWPPP) and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person(s) who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____

Name: Boyd E. Benson, PE, LEG

Title: City Engineer

Date: March 31, 2016

1.0 Background and General Requirements

The Washington State Department of Ecology (Ecology) requires that the City of Duvall (City) meet the requirements of the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater Permit (Permit). This NPDES permit covers discharges from the City's municipal separate storm sewer system (MS4) which is defined as:

“a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains): (i) owned or operated by a . . . city . . . (ii) designed or used for collecting or conveying stormwater; (iii) which is not a combined sewer; (iv) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2; and (v) Which is defined as “large” or “medium” or “small” or otherwise designated by Ecology pursuant to 40 CFR 122.26.”

NPDES Permit condition S5.C.5.h requires the City to develop and implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards and material storage facilities owned or operated by the City in areas subject to the NPDES Permit that are not covered under another Ecology-issued stormwater discharge permit. The City Public Works Department (Public Works) has developed this SWPPP to be implemented at applicable facilities in compliance with the NPDES Permit requirement based on the *Industrial Stormwater SWPPP Template (Ecology 2010)* and the *Generic Stormwater Prevention Pollution Plan (City of Seattle, 2008)*.

1.1 Objectives of the SWPPP

This document serves as the SWPPP for heavy equipment maintenance or storage yards and material storage facilities owned or operated by the City. Heavy equipment maintenance or storage yards are defined as an uncovered area where any heavy equipment (e.g., mowing equipment, excavators, dump trucks, backhoes, bulldozers) are washed or maintained, or where at least five pieces of heavy equipment are stored on a long term basis. Material storage facilities are defined as an uncovered area where bulk materials (e.g., liquid, solid, granular, etc.) are stored in piles, barrels, tanks, bins, crates, or other means.

Two Public Works equipment maintenance or storage yards and material storage facilities discharge to the City's MS4; the Maintenance Shop and the Public Works Building Complex. These two sites are included in this SWPPP since activities at these sites can be categorized as heavy equipment maintenance or storage yards and/or material storage facilities. These two facilities will be discussed in detail in the subsequent sections of this SWPPP.

The objectives of this SWPPP are:

- To implement and maintain best management practices (BMPs) that identify, reduce, eliminate, and/or prevent the discharge of stormwater pollutants.
- To prevent violations of Ecology surface water quality, groundwater quality, and sediment management standards.
- To prevent adverse impacts to receiving water by controlling peak rates and volumes of stormwater runoff.
- To eliminate unpermitted discharges and other illicit discharges to the City's MS4.

The SWPPP contains the methods, procedures, and BMP's that Public Works facilities implement to reduce or eliminate the release of pollutants to the City's MS4 and/or surface waters. The mechanisms for such a release may include the inadvertent contamination of stormwater or a direct discharge of pollutants to the MS4. This document includes the following information:

- Definition of SWPPP Coordinator requirements and responsibilities.
- Identification of Pollution Prevention Team personnel.
- Facility descriptions and activities.
- Description of BMPs.

- Description of monitoring, inspection, and recordkeeping requirements.

The following appendices are also included:

- Appendix A – Public Works Department Vicinity Map and Site Drainage Maps, Stormwater Pollution Prevention Plan, Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities.
- Appendix B – Public Works Department Spill History and Spill Reporting Form, Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities.
- Appendix C – Public Works Department Stormwater O&M Requirements Table, Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities.
- Appendix D – Public Works Department Annual Inspection Forms, Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities.
- Appendix E – Spill Prevention Plan for the Maintenance Shop, Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities.
- Appendix F – Source Specific Operational and Structural Source Control Best Management Practices (BMPs).

Update this SWPPP whenever there is a significant impact on discharges of pollutants from Public Works facilities (e.g., construction or a change in facility design).

1.2 NPDES Permit Coverage

The City's stormwater discharges are authorized under the terms and conditions of the NPDES Permit, effective on January 16, 2015, until the NPDES Permit expires. The City owns and manages property throughout the city. In general, Public Works is responsible for operation and maintenance (O&M) of the separate stormwater drainage system and other flow control and treatment stormwater BMPs located at their facilities.

1.3 Integration with Other Coverage

This SWPPP identifies:

- Citywide operational BMPs.
- Source-specific structural BMPs.
- Treatment BMPs.
- Stormwater peak runoff rate and volume control BMPs.
- Erosion and sediment control BMPs.
- O&M requirements.
- Stormwater control waste management requirements.

Applicable City-wide BMPs and source-specific BMPs are provided in this SWPPP, referenced from the Washington State Department of Ecology list of BMPs (<https://fortress.wa.gov/ecy/publications/parts/1410055part4.pdf>), or referenced from the Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines (<http://www.wsdot.wa.gov/NR/rdonlyres/F70E7937-F4DD-4ECC-9909-0C108C97C37A/0/Part2.pdf>).

1.4 SWPPP Availability

A copy of this SWPPP will be kept at each applicable Public Works facility or within reasonable access to the facility. It will be made immediately available to Ecology personnel onsite to the extent practicable. If the public request to view the SWPPP, a copy of the document will be made available within a reasonable time frame.

The Facility Supervisor must certify the completeness and accuracy of the SWPPP by signing the certification statement at the front of this document.

2.0 Facility Assessment

2.1 Operations at Public Works Facilities

The Public Works facilities covered by this SWPPP include operations and maintenance facilities that maintain and store heavy equipment and store materials used at Public Works facilities. The two Public Works facilities requiring a SWPPP, according to NPDES Permit requirements, include:

- Maintenance Shop.
- Public Works Building Complex.

2.1.1 Maintenance Shop

The Maintenance Shop is located at 26320 NE Stella Street in Duvall, Washington. The site covers approximately 0.42 acres and includes one 9,200 square foot Public Works Maintenance open-sided pole barn building. All materials and equipment at the site are stored beneath the covered building with the exception of one to three pieces of equipment (back-hoe, mini-trackhoe, and dump truck), sealed trash containers, and traffic-control devices (signs, lumber, and barricades).

The primary uses of the Maintenance Shop include storage and maintenance of Public Works vehicles, fuel storage station for small (hand-held) equipment, a covered above ground 500 gallon double-walled diesel fuel storage tank, street sweeper unloading area, Public Works vehicle maintenance and storage, Public Works field crew office space, and one 1,000-gallon and one 200-gallon de-icer tanks. All activities are completed under the covered portion of the site with the exception of outdoor equipment storage. Public Works staff housed onsite include the public works crew and supervisor in charge of street maintenance, asphalt and concrete paving, street cleaning, roadway structures, and utilities maintenance. A copy of the SWPPP is located on-site in the Public Works Supervisor's office and is available to all staff.

Eight pollution-generating activities conducted at the Maintenance Shop were identified:

- Washing, pressure washing, and steam cleaning of vehicles, equipment, and building structures.
- Loading and unloading of liquid or solid material.
- Fueling of equipment at dedicated stations.
- Minor automotive repair and maintenance.
- Landscaping and lawn and vegetation management.
- Painting, finishing, and coating of equipment.
- Storage of liquids in permanent aboveground tanks.
- Parking lot maintenance and storage of vehicles and equipment.

2.1.2 Public Works Building Complex

The Public Works Building Complex is located at 14525 Main Street NE in Duvall, Washington. The 2.84 acre parcel includes the Public Works Office Building, the Wastewater Treatment Plant, a small lab building, parking for utility trailers and towed equipment, and a fueling station. The fueling station is a double-walled 1,000 gallon gasoline fuel tank on a concrete containment pad that covers approximately 0.02 acre portion of the site and is used as for fueling city vehicles. The WWTP portion of the site is covered under a separate DOE permit. A copy of the SWPPP is located on-site at the Public Works/Building Department reception desk and is available to all staff.

Two pollution-generating activity conducted at the Public Works Fuel Station was identified:

- Fueling at a dedicated station (1,000-gallon double-walled gasoline tank).
- Parking lot maintenance and storage of vehicles and equipment.

2.2 Vicinity Map and Site Drainage Plans

A vicinity map (Figure A-1) and individual site drainage plans for the Maintenance Shop (Figure A-2) and the Public Works Building Complex (Figure A-3) are provided in Appendix A. The individual site drainage plans are posted at each facility as part of the spill plans (see Appendix E). Each site drainage plan identifies the facility layout; buildings; stormwater drainage system, sanitary sewer system; spill kit locations; heavy equipment maintenance and/or storage areas; and material storage areas.

2.3 Receiving Waters and Wetlands

In general, stormwater runoff from Public Works facilities includes runoff from buildings, parking lots, and paved and gravel areas. The stormwater runoff discussed in this SWPPP is conveyed to the City's MS4. Table 1 lists the point of discharge for the two Public Works facilities requiring SWPPPs. These water bodies are also identified on the vicinity map (Figure A-1) and individual site drainage plans (Figures A-2 and A-3) in Appendix A.

Table 1. Addresses and points of discharge for the Maintenance Shop and the Public Works Fuel Station.

Facility Name	Address	Point of Discharge
Maintenance Shop	26320 NE Stella Street	Snoqualmie River
Public Works Building Complex	14525 Main Street NE	Wetland Area, Thayer Creek, Snoqualmie River

3.0 Areas Associated With Permit-Covered Activity

3.1 Activities in the Area

The two Public Works facilities that conduct permit-covered activities are listed below in Table 2 and are shown in Figures A-2 and A-3 in Appendix A. All pollutant-generating activities are conducted on impervious surfaces (i.e., pavement) or inside buildings, depending on the facility. The typical 'wet' season when these activities may impact stormwater can be defined as October through April.

This SWPPP will be updated as the changes occur and/or updates are warranted.

3.2 Pollutants

Heavy equipment maintenance or storage yard pollutants include, but are not limited to, diesel, gasoline, hydraulic fluids, oil, solvents, de-icing fluid, and other soluble and non-soluble chemicals used for the day-to-day maintenance of Public Works heavy equipment (e.g., mowing equipment, excavators, dump trucks, backhoes, etc.).

Material storage pollutants include, but are not limited to sand, bark, mulch, gravel, de-icing salts, gasoline, diesel, wood (treated and non-treated), loose metal equipment, and waste materials from day-to-day operations.

Table 2 lists the potential pollutants associated with the two facilities. A Spill Prevention Plan has been developed for the Maintenance Shop and Public Works Building Complex (see Appendix E) and is posted at or adjacent to each site.

Table 2. Pollution-generating activities, potential pollutants, and relevant BMPs at Maintenance Shop and the Public Works Building Complex

Facility Name	Address	Pollution-Generating Activity	Potential Pollutants	Relevant Source Control BMP*
Maintenance Shop	26320 NE Stella St.	Washing, pressure washing, and steam cleaning of vehicles, equipment, and building structures	Soaps and detergents, oils and greases, suspended solids, metals	BMP 17
		Loading and unloading of liquid or solid materials	Fuels, hydraulic fluids, oils, bulk salt, granular de-icing material, liquid de-icing fluid	BMP 5, 13, 14
		Fueling at dedicated stations.	Gasoline and diesel fuel	BMP 2
		Minor Automotive Repair and maintenance	Gasoline, diesel fuel, lubricating oils, antifreeze, solvents	BMP 6
		Landscaping and lawn vegetation management	Pesticides, fertilizers	BMP 4
		Painting, finishing, and coating of equipment	Paint, solvents, metals	BMP 10
		Storage of liquids in permanent above-ground tanks	De-icing fluid, diesel fuel	BMP 13, 14, 15
Public Works Building Complex	14525 Main St. NE	Parking lot maintenance and storage of vehicles and equipment	Oils and greases, suspended solids, metals	BMP 7
		Fueling at a dedicated station	Gasoline	BMP 2
		Storage of vehicles and equipment	Oils and greases, suspended solids, metals	BMP 7

* See Appendix F for BMP descriptions

4.0 Historical Spills and Leaks

There are no reported or documented spills or leaks at the Maintenance Shop or Public Works Building Complex within the last three years. Any future spills or leaks at these locations will be addressed using the Spill Prevention and Clean Up Plans prepared for the sites (see Appendix E). There are also no records of significant spills or leaks of oils and toxic or hazardous pollutants during the last three years at the sites. Any spills or leaks of oils and toxic or hazardous pollutants in areas exposed to precipitation or that drain to a stormwater conveyance will be kept at each facility using the Public Works Spill Reporting Form provided in Appendix B. A significant spill or leak is defined as either greater than five gallons or in excess of the chemical's reportable quantity that enters a storm drain or receiving water or contaminates soil and/or surface water. Reportable quantities of chemicals used at each facility can be determined by entering the chemical name or chemical abstract service (CAS) number into the reportable quantity calculator on the United States Department of Energy website (<http://homer.ornl.gov/rq/>).

Public Works will retain spill history records and maintain a copy of spill records for a minimum of five years. A copy of the spill records from the last three years must be produced if requested by Ecology. Public Works will continue to maintain spill records for each facility and update these records in the event of a spill.

5.0 Monitoring Plan

The City implements a stormwater monitoring plan in accordance with its NPDES Permit. Public Works is the lead department for implementation of this monitoring plan. Requirements within this SWPPP describe monitoring and reporting requirements for City facilities.

6.0 Illicit Non-stormwater Discharges

Some City facilities could potentially have internal building drains or sump overflows that are incorrectly plumbed to the City's MS4. Such storm drain connections could allow a variety of pollutants to flow directly to receiving waters instead of to the sanitary sewer or combined sewer system. Frequently, such connections are not intentional, but are harmful to the environment and must be eliminated.

The Maintenance Shop and Public Works Building Complex have been evaluated with respect to possible illicit non-stormwater discharges. No illicit non-stormwater discharge connections, or risk of connections, were identified as part of the evaluation of these facilities. No illicit non-stormwater discharge connections, or risk of connections, were identified at other City facilities including City Hall, Big Rock Ball Fields, and McCormick Park.

Public Works implements spill prevention programs and supplies spill kit materials, cleans up leaks and/or spills, and reports spills (see Spill Plan, Appendix E). If the spill enters the City's MS4, Public Works should be notified. Public Works manages the illicit discharge detection elimination (IDDE) program for the City, which includes a water quality hotline, business inspections, and illicit connection investigations. A major component of the IDDE program is the 24-hour citizen Illicit Discharge Hotline 425.939-8042 and 425.419.3748 (after hours, Emergency Only) and Stormwater Email Hotline (stormwater@duvallwa.gov) for reporting water quality complaints. In addition to citizen reports, the Water Quality Hotlines can also be used to capture complaints from other departments and agencies.

Certain non-stormwater discharges are allowed with the current Duvall Municipal Code (DMC). The permissible non-stormwater discharges to the MS4 that are allowed are summarized below according to DMC 9.06.35.E (Illicit Discharge Detection and Elimination).

Allowable Discharges: The following types of discharges shall not be considered illicit discharges for the purposes of this chapter unless the city engineer determines that the type of discharge, whether singly or in combination with others, is causing or is likely to cause pollution of surface water or groundwater:

- Diverted stream flows.
- Rising groundwaters.

- Uncontaminated groundwater infiltration -as defined in 40 CFR 35.2005(20).
- Uncontaminated pumped groundwater.
- Foundation drains.
- Air conditioning condensation.
- Irrigation water from agricultural sources that is commingled with urban.
- Stormwater.
- Springs.
- Water from crawl space pumps.
- Footing drains.
- Flows from riparian habitats and wetlands.
- Discharges from emergency fire-fighting activities.

Employees and the public unsure whether a discharge to the City's MS4 is permissible are encouraged to contact the City Engineer at Duvall Public Works.

7.0 Schedule for Implementing Additional or Enhanced BMPs

If additional or enhanced BMPs are either ordered by Ecology or are necessary due to facility change or a self-inspection, a schedule for their implementation will be incorporated into this SWPPP within 30 days of the self-determination or Ecology order.

8.0 BMPs for Compliance with the NPDES Permit

The NPDES Permit requires the implementation of BMPs to comply with Ecology water quality standards; all known, available, and reasonable methods of prevention, control, and treatment (AKART); and federal technology-based treatment requirements. These standards and technology-based requirements have been adopted by Ecology as rules. The BMPs presented in this document meet the standards and requirements described in the Ecology rules and the King County Road Services - Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines. These BMPs are presumed to have satisfied the demonstration requirement per the NPDES Permit.

9.0 Operational Source Control BMPs

Operational Source Control BMPs are defined by Ecology (2005) as "non-structural practices that prevent or reduce pollutants from entering stormwater" including "formation of a pollution prevention team, good housekeeping practices, preventative maintenance procedures, spill prevention and cleanup, employee training, inspection of pollutant sources, and record keeping." A brief summary of the Citywide BMPs are presented in this section.

9.1 Required Citywide BMPs

All facilities within the City implement the following six city-wide operational source control BMPs:

- BMP 1- Eliminate illicit connections to storm drains.
- BMP 2- Perform routine maintenance for stormwater drainage systems.
- BMP 3- Dispose of fluids and wastes properly.
- BMP 4- Proper storage of solid wastes.
- BMP 5- Spill prevention and cleanup.
- BMP 6- Provide oversight and training for staff.

9.1.1 BMP 1- Eliminate illicit connections to storm drains

The plumbing systems of City facilities have been examined to identify any illicit connections. No illicit connections have been determined as part of evaluations completed for this SWPPP. Public Works manages the IDDE program

for the City which includes a water quality hotline, business inspections and illicit connection investigation. Please refer to Section 6.0 of this report for additional information pertaining to this BMP.

9.1.2 BMP 2- Perform routine maintenance for stormwater drainage systems

Sediment and pollutants can accumulate over time in various components of stormwater collection, conveyance, and treatment systems, such as catch basins, ditches, storm drains, and oil/water separators. Regular City maintenance of the stormwater drainage system decreases the amount of pollutants that are available to contaminate the stormwater. Routine cleaning of catch basins is one of the most important stormwater source control measures that a facility can implement. When catch basins are about 60 percent full of sediment, the catch basins do not effectively remove sediment. For site-specific stormwater drainage system structures, conditions, and routine maintenance requirements, refer to Appendix C.

9.1.3 BMP 3- Dispose of fluids and wastes properly

Every City facility must properly dispose of solid and liquid wastes, and contaminated stormwater. There are generally four options for disposal, depending on the type of waste:

- Recycling facilities.
- Municipal solid waste disposal facilities.
- Hazardous waste treatment, storage, and disposal facilities.
- Sanitary sewer.

Many liquid wastes and contaminated stormwater (depending on the pollutants and associated concentrations) can be discharged to the sanitary sewer system, which is subject to approval by the Wastewater Treatment Plant Operator (425.788.0287). If wastes cannot be legally discharged to a sanitary sewer, one of the three other disposal options must be used. Sumps or holding tanks may be useful for storing liquid wastes temporarily. Dangerous or hazardous wastes must be properly transported to an appropriate hazardous waste treatment, storage, and disposal facility, requiring appropriate documentation.

9.1.4 BMP 4- Proper storage of solid wastes

City facilities must store wastes in suitable containers with leak-proof lids that are closed at all times. The waste storage area must be swept or otherwise cleaned frequently to collect all loose solids for proper disposal in a storage container. The area may not be hosed to collect or clean solids. Employees are educated about the need to check for and replace leaking containers. Drains located near dumpsters, dumpster pads, and trash compactors may not be connected to the stormwater system. These drains may discharge to the sanitary sewer system if allowed by the Wastewater Treatment Plant Operator (425.788.0287). Accumulated waste should not be allowed to exceed the capacity of the storage container. If this occurs, another storage container should be obtained and used.

9.1.5 BMP 5- Spill prevention and cleanup

A spill can be a one-time event, a continuous leak, or a frequent small leak. All three types of spills must be prevented. Leaks and spills of solid and liquid pollutants including oils, solvents, fuels, and dust from manufacturing operations on any exposed soil, vegetation, or paved area shall be promptly contained and cleaned up. Spill cleanup kits shall be available at activity locations where spills may occur and within Public Works vehicles and equipment. In order to reduce the potential for spills, the following practices shall be implemented:

- Clearly label all containers that contain potential pollutants.
- Store and transport liquid materials in appropriate containers with tight fitting lids.
- Place drip pans underneath all containers, fittings, valves, where materials are likely to spill or leak.
- Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied to capture any spilled materials.

- Train employees on the safe techniques for handling materials that are used on the site and encourage them to check for leaks and spills.

A Spill Prevention Plan has been developed for the Maintenance Shop and Public Works Building Complex (see Appendix E). The spill plan for the facilities has been implemented and will be updated annually or whenever there is a change in business activities or staff responsible for spill cleanup. The spill plan also identifies designated spill response employees who are responsible for implementing the plan and is posted at appropriate points at site.

Spill cleanup kits are stored near areas with a high potential for spills, so that they are easily accessible in the event of a spill. The contents of the spill kit are selected based on the types and quantities of materials stored or used at the facility and refilled when the materials are used.

9.1.6 BMP 6- Provide oversight and training for staff

All team members are trained annually in the operation, maintenance, and inspections of BMPs. This training is documented by the Public Works Department. Training staff about good housekeeping expectations is one of the most effective methods for keeping sediment and other pollutants out of stormwater and receiving waters.

Additional actions include assigning one or more qualified individuals to be responsible for the oversight and training of staff regarding stormwater pollution control. Regular meetings are held to review the overall operation of the BMPs, establish responsibilities for inspections and O&M, and determine responsibilities for emergency situations.

9.2 Formation of a Pollution Prevention Team

This section describes the organization of a pollution prevention team responsible for developing the SWPPP and assisting in its implementation, maintenance, and modification. The activities and responsibilities of the pollution prevention team address all aspects of this SWPPP. The responsibilities include:

- Assigning one or more individuals by name and title to be responsible for developing the SWPPP and assisting the SWPPP Coordinator in its implementation, maintenance, and modification.
- Holding meetings to review the overall operation of the BMPs.
- Establishing responsibilities for inspections, O&M, and emergency situations.
- Arranging the training of all team members in the operation, maintenance, and inspections of BMPs.

The pollution prevention team consists of management and facility operations personnel and includes a SWPPP Coordinator (the City Engineer), the Public Works Superintendent, the Public Works Supervisor for the two facilities, and other identified individuals responsible for developing the plan and assisting the supervisor in its implementation. A list of each team members, contact information, and a brief description of their primary area of responsibility regarding stormwater pollution prevention is provided in Table 3.

Table 3. Pollution prevention team for the Maintenance Shop, Public Works Fuel Station, and Tech Center Storage Yard

POSITION	NAME	PHONE NUMBER	PRIMARY RESPONSIBILITIES
SWPPP Coordinator	Boyd Benson, City Engineer	425.788.3434	Ensure that each facility is in compliance with the SWPPP by signing a certification certificate.
NPDES Management	Boyd Benson, City Engineer	425.788.3434	Manage NPDES permit requirements (including developing, implementing, maintaining, and revising the SWPPP) and assisting each facility with state and City of Duvall regulatory issues pertaining to stormwater pollution prevention.

POSITION	NAME	PHONE NUMBER	PRIMARY RESPONSIBILITIES
Applicable Supervisors and Contractor Staff	Mike Fisher, Public Works Superintendent	425.788.3434	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted.
Trainer(s)	Mike Fisher, Public Works Superintendent	425.788.3434	Ensure stormwater pollution prevention training is conducted and that all applicable staff are trained in the relevant BMPs, as outlined in this SWPPP
	Joe Chriest, Public Works Supervisor	425.788.3332	
Chief of Maintenance and Operations	Joe Chriest, Public Works Supervisor	425.788.3332	Responsible for maintenance and operations at Public Works facilities.

Note: Update this table if personnel changes occur.

9.3 Reporting and Recordkeeping

Records of all inspections, observations, and compliance records, as applicable, will be maintained for a minimum of five years.

9.4 Inspections

Staff identified in the pollution prevention team (Table 3) must regularly inspect all areas on Public Works-owned sites where heavy equipment maintenance or storage and material storage are exposed to stormwater and assess how well stormwater BMPs are operating. Complete routine inspections must occur annually; a minimum of one additional inspection, preferable during the wet season (October through April) after trees have lost their leaves, is required to ensure that trash, debris, sediment, and/or vegetation is not blocking more than 10 percent of the inlet capacity. It is recommended that additional inspections be performed as appropriate after major events (e.g., >1 inch of precipitation in 24 hours or environmental incident that causes contaminant release). Results of the inspections are to be recorded on the Inspection Report form provided in Appendix D.

If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the form for the extended repair schedule. In the interim, back-up measures must be implemented to ensure that stormwater quality is not diminished.

10.0 Source-Specific Structural Source Control BMPs

Tables 4 and 5 provide source-specific structural source control BMPs for the Maintenance Shop and Public Works Building Complex based on outdoor activities that could potentially impact stormwater quality identified during a Citywide source control assessment completed in 2009. These are actions required in addition to the operational BMPs listed in Section 9.0.

Table 4. Pollution-generating activities, existing BMPs, and corrective actions for the Maintenance Shop.

Pollution-Generating Activity	Relevant Source Control BMP*	Existing BMPs	Corrective Actions
Washing, pressure washing, and steam cleaning of vehicles, equipment, and building structures	BMP 17	Outdoor vehicle and equipment washing operations are conducted in a designated wash area that discharges to vegetated surfaces.	None
Loading and unloading of liquid or solid material	BMP 5, 13, 14	Loading and unloading is completed under the covered portion of the site. Surfaces are frequently swept (3 – 5 times per week) to remove accumulated debris and other material	None
Fueling of equipment at dedicated stations	BMP 2	The gasoline fueling station is located within the covered portion of the site on a paved surface. The diesel fueling station is located outdoors within a containment area and under a roof.	None
Minor automotive repair and maintenance	BMP 6	Maintenance and repair activities are conducted under cover on a paved surface.	None
Landscaping and lawn and vegetation management	BMP 4	Pesticides and fertilizers are stored under the covered portion of the site on a paved surface	None
Painting, finishing, and coating of equipment	BMP 10	Painting/coating of equipment is completed under the covered portion of the site on a paved surface	None
Storage of liquids in permanent above-ground tanks	BMP 13,14,15	Storage tanks are located under cover	None
Parking lot maintenance and storage of vehicles and equipment	BMP 7	Surfaces are frequently swept (3 – 5 times per week) to remove accumulated debris and other material and most equipment is kept under cover	None

*See Appendix F for BMP Descriptions

Table 5. Pollution-generating activities, existing BMPs, and corrective actions for the Public Works Building Complex.

Pollution-Generating Activity	Relevant Source Control BMP*	Existing BMPs	Corrective Actions
Fueling at dedicated stations	BMP 12	The fueling station is located within a concrete containment pan.	None
Parking lot maintenance and storage of vehicles and equipment	BMP 7	Surfaces are frequently swept as needed to remove accumulated debris and other material and most equipment is kept under cover	None

*See Appendix F for BMP Descriptions

11.0 Treatment BMPs

Currently, Public Works is required to meet all state and federal surface water quality requirements, but is not required to monitor water discharging from its facilities. Public Works will implement the requirements and BMPs identified in the King County Surface Water Design Manual and Public Work Design Standards for new development and redevelopment projects. Some applicable treatment BMPs include:

- Biofiltration swales.
- Filter strips.
- Infiltration and bio-infiltration (e.g., infiltration basins and trenches, bio-infiltration swales, bio-retention, and ecology embankments).
- Sand filtration.
- Wetpools (e.g., wetponds, wetvaults, and stormwater treatment wetlands).
- Oil control facilities.
- Emerging technologies.

Due to the variation in site-specific characteristics for each new development and redevelopment project, the applications and limitations, design criteria, and maintenance requirements for each of these, treatment BMPs are not provided in this SWPPP. Please refer to the King County Surface Water Design Manual and Public Work Design Standards for additional information regarding treatment BMPs.

12.0 Flow Control BMPs

Flow control BMPs required for new development and redevelopment are included in the King County Surface Water Design Manual and Public Work Design Standards and Public Works will implement requirements and BMPs specified in that manual. Some applicable flow control BMPs include:

- Bio-retention.
- Pervious pavement.
- Vegetated roofs.
- Detention cisterns.
- Dispersion (e.g., downspout or sheet flow).
- Infiltration (e.g., infiltration basins, infiltration trenches, drywells).
- Detention (e.g., detention pond, detention pipe, detention vault).

Due to the variation in site-specific characteristics for each new development and redevelopment project, the applications and limitations, design criteria, and maintenance requirements for each of these, flow control BMPs are not provided in this SWPPP. Please refer to the King County Surface Water Design Manual, the Department of Ecology Stormwater Management Manual for Western Washington, the King County Road Services Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines, and Public Work Design Standards for additional information regarding flow control BMPs.

13.0 Erosion and Sediment Control BMPs

If an activity or area has a high potential for significant soil erosion during new development or redevelopment, Public Works will implement the requirements and BMPs identified King County Surface Water Design Manual, the Department of Ecology Stormwater Management Manual for Western Washington, the King County Road Services Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines, and Public Work Design Standards which includes elements of water quality and downstream resource protection:

1. Mark Clearing Limits and Sensitive Areas.
2. Retain Top Layer.
3. Establish Construction Access.
4. Protect Downstream Properties and Receiving Waters.
5. Prevent Erosion and Sediment Transport from the Site.
6. Prevent Erosion and Sediment Transport from the Site by Vehicles.
7. Stabilize Soils.
8. Protect Slopes.
9. Protect Storm Drains.
10. Stabilize Channels and Outlets.
11. Control Pollutants.
12. Control Dewatering.
13. Maintain BMPs.
14. Inspect BMPs.
15. Execute Construction Stormwater Control Plan.
16. Minimize Open Trenches.
17. Phase the Project.

Each of these elements has Department of Ecology or other BMPs associated with its implementation and the most appropriate BMP for the site can be selected. Due to the variation in site-specific characteristics for each new development and redevelopment project, design criteria, and maintenance requirements for each of these, erosion and sediment control BMPs are not provided in this SWPPP. Please refer to the King County Surface Water Design Manual, the Department of Ecology Stormwater Management Manual for Western Washington, the King County Road Services Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines, and Public Work Design Standards for additional information regarding erosion and sediment control BMPs.

14.0 Operation and Maintenance

An O&M requirements table, which includes required inspection frequencies, has been developed for stormwater drainage structures, flow control facilities, and water quality treatment facilities located at Maintenance Shop, Fuel Station, and Tech Center Storage Yard. The O&M requirements table for these three facilities can be found in Appendix C.

15.0 Handling and Disposal of Solid and Liquid

Wastes from Stormwater Treatment, Storage, and Conveyance Systems, solid and liquid wastes from stormwater treatment, storage, and conveyance systems are handled according to the requirements and BMPs in the King County Road Services Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines, and Department of Ecology Source-Specific Operational and Structural Source Control Best Management Practices (BMPs) (Appendix F). If new development, redevelopment, or additional properties are acquired by Public Works, additional requirements and BMPs may be applicable.

16.0 Concluding Statement

The SWPPP Coordinator, Public Works Superintendent, and Public Works Supervisor are responsible for ensuring employees who are engaged in activities covered by the NPDES Permit at areas near stormwater drains and other such conveyances are informed about the existence and contents of this plan. All such employees will be informed that compliance with the contents of this plan is required by City and State laws and regulations, and that non-compliance can lead to serious civil and criminal penalties against the City.

17.0 References

Duvall, 2016. Duvall Municipal Code. Prepared by the City of Duvall.

https://www.municode.com/library/wa/duvall/codes/code_of_ordinances

Duvall, 2013. Development Design Standards. Prepared by the City of Duvall Public Works Department, July 2013.

<http://www.duvallwa.gov/DocumentCenter/View/314>

King County, 2008. King County Road Services - Regional Road Maintenance Endangered Species Act (ESA)

Program Guidelines [http://www.wsdot.wa.gov/NR/rdonlyres/F70E7937-F4DD-4ECC-9909-](http://www.wsdot.wa.gov/NR/rdonlyres/F70E7937-F4DD-4ECC-9909-0C108C97C37A/0/Part2.pdf)

[0C108C97C37A/0/Part2.pdf](http://www.wsdot.wa.gov/NR/rdonlyres/F70E7937-F4DD-4ECC-9909-0C108C97C37A/0/Part2.pdf)

King County, 2009, Surface Water Design Manual. Prepared by the King County Department of Natural Resources,

January 9, 2009. [http://your.kingcounty.gov/dnrp/library/water-and-land/stormwater/surface-water-design-](http://your.kingcounty.gov/dnrp/library/water-and-land/stormwater/surface-water-design-manual/SWDM-2009.pdf)

[manual/SWDM-2009.pdf](http://your.kingcounty.gov/dnrp/library/water-and-land/stormwater/surface-water-design-manual/SWDM-2009.pdf)

Ecology, 2004. Guidance Manual for Preparing/Updating a Stormwater Pollution Prevention Plan for Industrial Facilities. Publication Number 04-10-030. Prepared by the Washington State Department of Ecology. April 2004.

<https://fortress.wa.gov/ecy/publications/summarypages/0410030.html>

Ecology, 2014, Stormwater Management Manual for Western Washington. Prepared by the Washington State

Department of Ecology. <https://fortress.wa.gov/ecy/publications/SummaryPages/1410055.html>

APPENDIX A

Public Works Department
Vicinity Map and Site Drainage Plans
Stormwater Pollution Prevention Plan for Heavy Equipment Maintenance,
Storage Yards and Material Storage Facilities

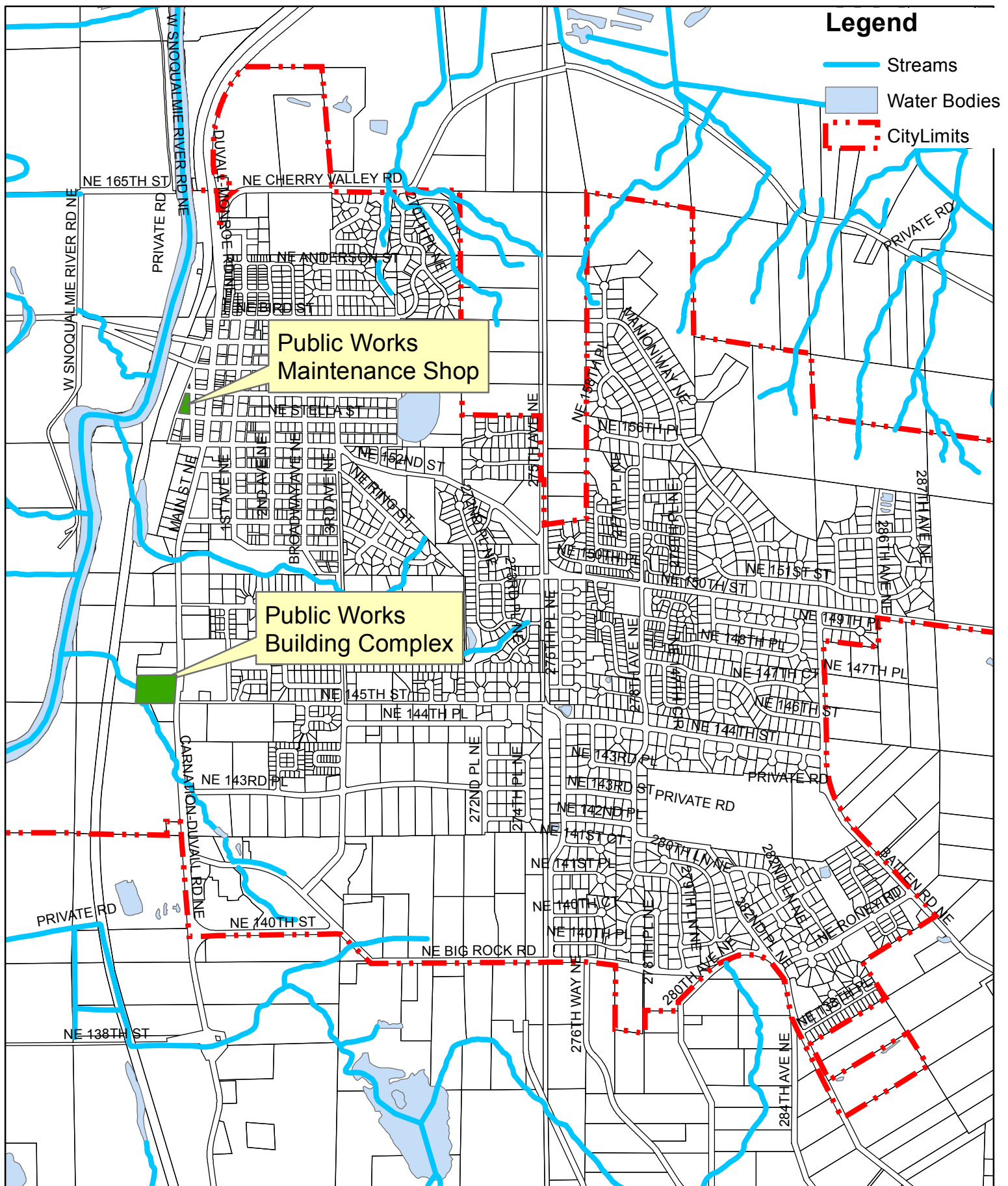


FIGURE A-1: VICINITY MAP FOR PUBLIC WORKS MAINTENANCE SHOP AND BUILDING COMPLEX

Created by the City of Duval December 2014. The City makes no representation or warranty as to the Product's accuracy of location of any map features therein. The City disclaims any warranty of merchantability or warranty of fitness or use for a particular purpose, expressed or implied, with respect to this product. For more information, contact the City of Duval at 425.788.3434. Parcel Data provided by permission of King County



0 0.5 Miles





FIGURE A-2: SITE DRAINAGE PLANS FOR PUBLIC WORKS MAINTENANCE SHOP

Created by the City of Duvall December 2014. The City makes no representation or warranty as to the Product's accuracy of location of any map features therein. The City disclaims any warranty of merchantability or warranty of fitness or use for a particular purpose, expressed or implied, with respect to this product. For more information, contact the City of Duvall at 425.788.3434. Parcel Data provided by permission of King County



0 0.1 Miles



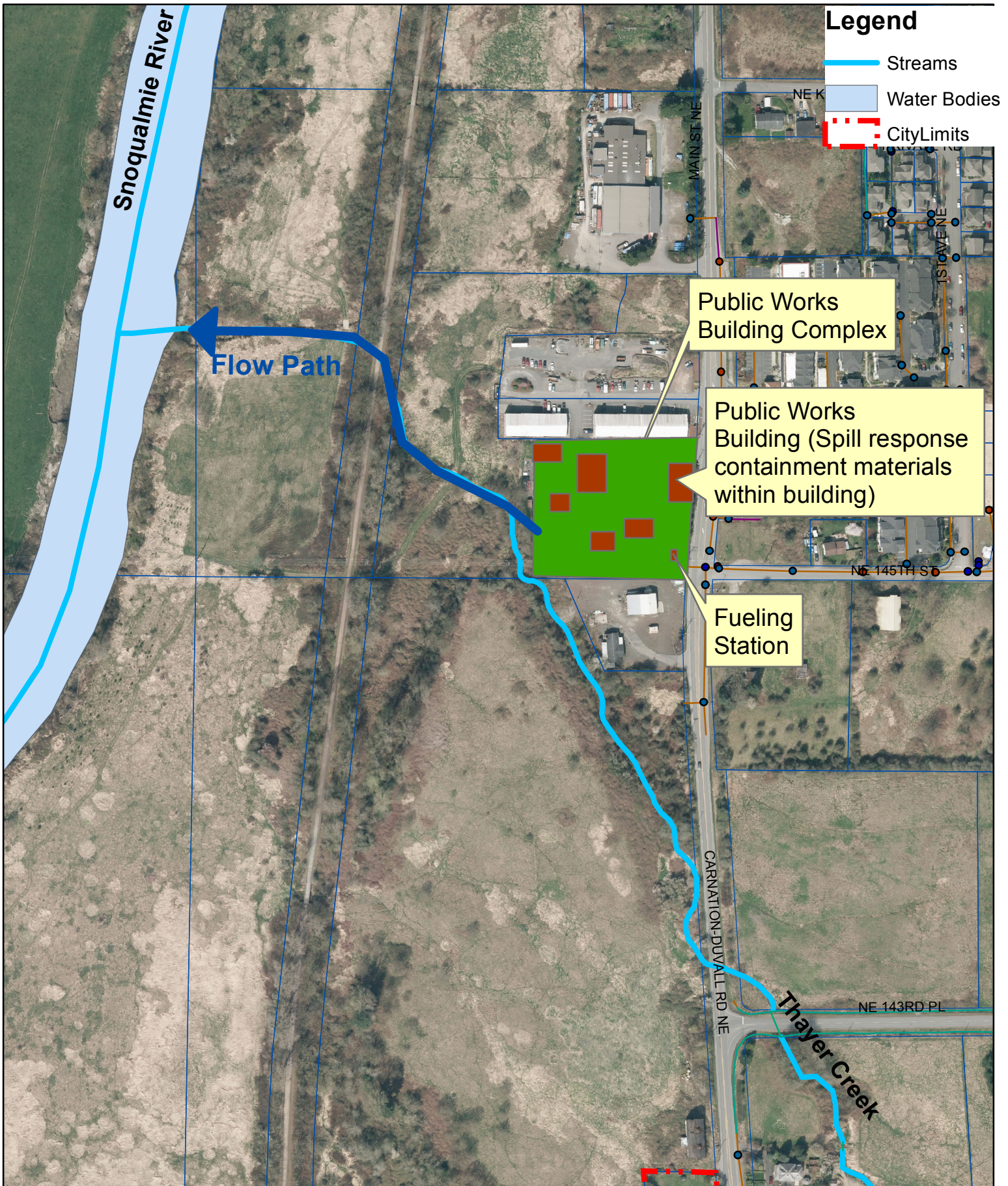


FIGURE A-2: SITE DRAINAGE PLANS FOR PUBLIC WORKS MAINTENANCE SHOP

Created by the City of Duvall December 2014. The City makes no representation or warranty as to the Product's accuracy of location of any map features therein. The City disclaims any warranty of merchantability or warranty for fitness or use for a particular purpose, expressed or implied, with respect to this product. For more information, contact the City of Duvall at 425.788.3434.
Parcel Data provided by permission of King County



0 0.1 Miles



APPENDIX B

Public Works Department
Spill History and Spill Reporting Form
Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities

APPENDIX C

Public Works Department
Stormwater O&M Requirements Table
Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities

Figure C-1. General descriptions, required actions, and recommendations for stormwater drainage systems present at Public Works facilities.

Type and number of stormwater drainage system structures	General Site Stormwater Drainage System Conditions ^a	Notes	Required Maintenance Actions ^b	Required Structural / Operational Actions	Recommendations	Inspections and Maintenance Requirements ^{c,d}
Maintenance Shop						
_____ CB						
_____ Storm Drain Inlets						
_____ Trench Drain ^f						
Public Works Building Complex						
_____ CB						
_____ Storm Drain Inlets						
_____ Trench Drain ^f						

Notes:

- ^a Good = structures are not physically damaged; however, may need cleaning and/or maintenance; Fair = specific structures in need of structural repair; Poor = majority of structures in need of structural repair or replacement and not functioning as designed.
- ^b Discharges from catch basin cleaning should be prevented from entering the stormwater system. The preferred decant liquids disposal option is to discharge to the sanitary sewer system, if prior approval is obtained by the Waste Water Treatment Plant Operator and Duvall Public Works. If this preferred option is not available, discharge of decant liquids may be allowed to a stormwater treatment BMP if prior approval has been obtained from Duvall Public Works. Solids removed during the cleaning process should be disposed of at an approved disposal facility. If the generator or hauler notices suspicious odor or coloration, a separate waste clearance and testing is required. Verify that the person(s) responsible for cleaning the facility can demonstrate appropriate disposal capabilities.

^c

Refer to King County Surface Water Design Manual, the Public Works Standards, and Appendix D for a complete checklist of items to be inspected including a comprehensive list of maintenance requirements.

^d

It is recommended that at least one inspection occur during the wet season, preferably after trees have lost their leaves. It is also recommended that additional inspections be performed as appropriate after major storm events (e.g. > 1 inch of precipitation in 24 hours) or an environmental incident that causes a contaminant release.

^f

Although no inspection schedule or O&M requirements are provided for trench drains, it is recommended that these be inspected during the annual inspection. If accumulated debris/sediment is impacting the function of the trench drain, it should be removed during catch basin cleaning.

Abbreviations:

CB: catch basin

MH: maintenance hole

APPENDIX D

Public Works Department
Annual Inspection Forms
Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities

Figure D-1. Public Works Department Annual Inspection Form for Catch Basins and Inlets

Components	Inspection Frequency ^a	Condition when Maintenance Required	Action Required	Satisfactory	Unsatisfactory	Comments
Cleaning						
Trash, debris, sediment, vegetation	A ^b	Accumulated material with 18 inches of the bottom of the lowest pipe entering or exiting the structure or filling greater than 60 percent of the sump depth.	Remove / dispose in accordance with state and federal regulations			
	A	Sediment, debris, or vegetation blocking 1/3 capacity of inlet or outlet pipes.	Remove / dispose in accordance with state and federal regulations.			
	B, W, E	Vegetation / debris blocking 10 percent or more of inlet capacity.	Clean and dispose of material			
	A	Dead animals or vegetation that could generate odors and cause complaints or dangerous gases (e.g., methane).	Remove / dispose			
Pollution	A ^b , E	Any visible accumulation of oil, gas, paint, or any other contaminant (includes concrete debris or slurry).	Remove / dispose in accordance with state and federal regulations. If possible, identify and control source			
Structure						
Frame and / or top slab	A	Corner extends more than 0.75 inches past curb face or street surface (where applicable).	Repair so frame even with curb			
	A	Holes greater than 2 inches or cracks greater than 0.25 inches in top slab.	Repair to water tight condition			
	A	Frame not flush with top slab (separation >0.75 inches) or not securely attached.	Repair			
CB structure	A	Cracks wider than 0.5 inches and longer than 1 foot, missing bricks, evidence of water or soil entering, judged to be structurally unsound by maintenance personnel.	Repair			
	A	Cracks wider than 0.5 inches and longer than 1 foot at pipe inlet / outlet.	Repair			
Cover / grate	A	Cover / grate missing, damaged, or only partially in place.	Repair / replace			
	A	Grate openings are wider than 7/8 inch.	Replace			

Components	Inspection Frequency ^a	Condition when Maintenance Required	Action Required	Satisfactory	Unsatisfactory	Comments
Structure (Continued)						
	A	Buried.	Expose and restore to surface grade			
Ladder	A	Ladder rungs damaged, missing, or misaligned.	Repair / replace			

^a Inspection frequency:

A = Annually;

B = Biannually (twice per year);

W = Recommend that at least one inspection occur during the wet season, preferably after trees have lost their leaves;

E = Recommend that additional inspections be performed as appropriate after major events (e.g., >1 inch of precipitation in 24 hours or environmental incident which causes contaminant release).

^b Minimum requirement is for annual inspections. More frequent inspections and maintenance may be required depending on site conditions.

Figure D-2. Public Works Stormwater Management Assessment
Catch Basin Inspection

[illegible]

Figure D-3. Public Works Source Control Annual Inspection Form

Date and time of inspection: _____

Weather conditions: _____

Site Inspector name(s): _____

Site Inspector Title(s): _____

Site Inspector phone number(s): _____

Spill Prevention:

Are spill kits located near high-risk spill areas? ☐ Yes ☐ No

Check the following spill kit supplies that need to be refilled:

<input type="checkbox"/> Sorbent Booms	<input type="checkbox"/> Sorbent pads	<input type="checkbox"/> Kitty litter	<input type="checkbox"/> Granular sorbent
<input type="checkbox"/> Acid / base neutralizer	<input type="checkbox"/> Solvent absorbent	<input type="checkbox"/> Drip pans	<input type="checkbox"/> Drain cover

Recommended Actions: _____

Vehicles and fueling:

Are there signs of leaking vehicles? ☐ Yes ☐ No

Are there non-operating vehicles parked onsite? ☐ Yes ☐ No

Recommended Actions: _____

Outdoor Storage Areas:

Does yard area have oil staining or visible sheen? ☐ Yes ☐ No

Does yard area have signs of distressed vegetation? ☐ Yes ☐ No

Are garbage dumpsters covered and free of leaks? ☐ Yes ☐ No

Is there evidence of significant spills around waste containers? ☐ Yes ☐ No

Are there oils, grease, or other substances exposed to stormwater? ☐ Yes ☐ No

Recommended Actions: _____

Type of Material Stored Outside <i>(circle all applicable items)</i>	Secondary Containment	Covered	Is the Material escaping the storage area? If Yes, explain	Corrective Actions
Acids	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Antifreeze	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Automotive Parts	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Batteries	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Caustic Bases	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Landscaping Materials	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Metals	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Paints / Coatings	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Pesticides / Herbicides	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Petroleum / Oils (e.g. hydraulic, cutting, motor)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Plastics	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Recycling	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Restaurant Grease	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Solid Waste	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Solvents	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Tires	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Other:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Other:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Other:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Notes:				

APPENDIX E

Spill Prevention Plan Heavy Equipment Maintenance, Storage Yards and Material Storage Facilities

Spill Prevention Plan

Heavy Equipment Maintenance, Storage Yards, and Material Storage Facilities

City of Duvall

March 2016 Update

AN UPDATED COPY OF THIS PLAN AND ITS ATTACHMENTS MUST
BE ACCESSIBLE AT THE SITE DURING ALL FIELD ACTIVITIES

Prepared by:

City of Duvall
PO Box 1300
Duvall, WA 98019
425.788.3434

TABLE OF CONTENTS

Introduction	1
Management Approval	1
Spill Plan Elements	2
1. Responsible Personnel	2
2. Spill Reporting	2
3. Project And Site Information	4
4: Potential Spill Sources	4
5. Pre-Existing Contamination	7
6. Spill Prevention And Response Training	7
7. Spill Prevention.....	7
8. Spill Response	8
9. Project Site Maps.....	9
10. Spill Report Form(S).....	9

TABLES AND FIGURES

Table 1: Spill Plan Contacts	2
Figure 1: External Regulatory Reporting Requirements Flowchart	3
Table 2: Nearby Waterways and Sensitive Areas	4
Table 3: Hazardous Materials Brought or Generated On-Site	5
Table 4: Spill Response Kit Contents and Locations	7

INTRODUCTION

This Spill Prevention Plan (Spill Plan) is intended to supplement the Stormwater Pollution Prevention Plan (SWPPP) for Duvall Public Works Heavy Equipment Maintenance, Storage Yards, and Material Storage Facilities. Two Public Works equipment maintenance or storage yards and material storage facilities discharge to the City's separate storm drainage system; The Public Works Maintenance Shop and the Public Works Building Complex. These two sites are included in this Spill Plan since activities at these sites can be categorized as heavy equipment maintenance or storage yards and/or material storage facilities. These two facilities are described in the SWPPP and will be discussed in detail in the subsequent sections of this Spill Plan. This document was prepared using Department of Ecology guidelines and the WSDOT SPCC Plan Template.

The Maintenance Shop and Public Works Building Complex described in this Spill Plan are under the primary responsibility of the City of Duvall (City). The City has developed this Spill Plan to protect human health and the environment from spills and releases of "hazardous materials", including dangerous waste, problem waste, petroleum products, and hazardous substances in accordance with the SWPPP for the sites and NPDES requirements.

The City of Duvall requires that the strongest emphasis be placed on hazardous material spill prevention. All known and reasonable best management practices and safety procedures must be used at all times on all City sites and projects when dealing with hazardous materials. An updated copy of this Spill Plan must be maintained at the sites at all times. The plan must be updated when sites change in design or operation cause the content of the Spill Plan to be inconsistent or conflicting with actual site conditions and practices.

All field (Public Works Crew and Engineering Department) employees and subcontractors shall be trained in spill prevention and containment. Employees will know where the Spill Plan and spill response kits are located and will have immediate access to them.

MANAGEMENT APPROVAL

This Spill Plan is supported by management with the authority to commit the necessary resources including manpower, equipment, and materials to expeditiously control and remove any harmful quantity of oil or hazardous substances released to the water or land of the State of Washington.

March 31, 2016

Boyd Benson PE, LEG, Duvall City Engineer

SPILL PLAN ELEMENTS

1. Responsible Personnel

The City Engineer is the primary person in charge of updating the Spill Plan in conjunction with the Public Works Superintendent. The Superintendent is the primary person in charge of coordinating spill prevention and response at the sites. Responsible personnel and contact information are presented in Table 1 below.

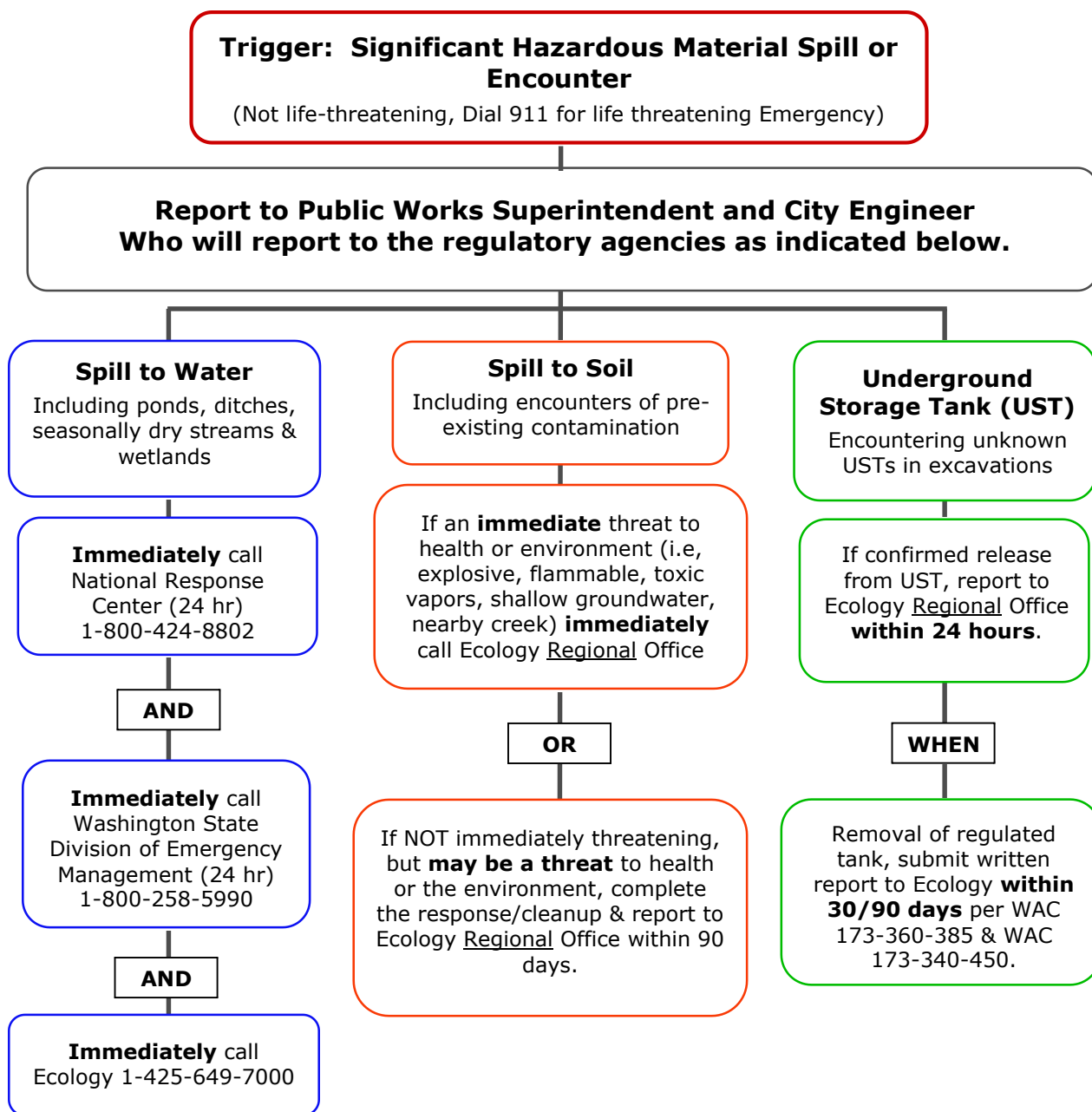
Table 1: Spill Plan Contacts

Responsibility	Name and Title	Phone Number
MAINTENANCE SHOP		
Primary Spill Plan Contact	Mike Fisher, Public Works Superintendent	Office:425-788-3434 Cell: 206-255-1374
Secondary Spill Plan Contact	Joe Chriest, Public Works Supervisor	Office:425-788-3332 Cell: 206-255-1689
On-Site Spill Responder	Gavin Harold Maintenance II Crew	Office:425-788-3332 Cell: 206-255-4575
Spill Response Subcontractor	Ventilation Power	Office:206-634-2750 Cell: 206-391-6501
PUBLIC WORKS BUILDING COMPLEX		
Primary Spill Plan Contact	Mike Fisher, Public Works Superintendent	Office:425-788-3434 Cell: 206-255-1374
Secondary Spill Plan Contact	Joe Chriest, Public Works Supervisor	Office:425-788-3332 Cell: 206-255-1689
On-Site Spill Responder	Gavin Harold Maintenance II Crew	Office:425-788-3332 Cell: 206-255-4575
Spill Response Subcontractor	Ventilation Power	Office:206-634-2750 Cell: 206-391-6501

2. Spill Reporting

All spills or encounters of hazardous materials are reported to the Public Works Superintendent and the City Engineer, the primary staff in charge of spill prevention and response for the City. Once the spill has been reported internally, external agency notifications must be made by the designated person, as outlined in Figure 1. A significant spill or leak is defined as either greater than five gallons or in excess of the chemical's reportable quantity that enters a storm drain or receiving water or contaminates soil and/or surface water. Reportable quantities of chemicals used at each facility can be determined by entering the chemical name or chemical abstract service (CAS) number into the reportable quantity calculator on the United States Department of Energy website (<http://homer.ornl.gov/rq/>).

Figure 1: External Regulatory Reporting Requirements Flowchart



3. Project and Site Information

Project and Site information for the two Duvall Public Works Heavy Equipment Maintenance, Storage Yards, and Material Storage Facilities is presented below and in Table 2:

- A. Maintenance Shop, 26320 NE Stella Street in Duvall, Washington: The primary uses of the Maintenance Shop include storage and maintenance of Public Works vehicles, fuel storage station for small (hand-help) equipment, an above ground 500 gallon double-wall diesel fuel storage tank, street sweeper unloading area, Public Works vehicle maintenance and storage, Public Works field crew office space, and one 1,000-gallon and two 250-gallon above ground de-icer tanks. See SWPPP Appendix A-1 for a Vicinity Map and SWPPP Appendix A-2 for site plan and features.
- B. The Public Works Building Complex is located at 14525 Main Street NE in Duvall, Washington. The 2.84 acre parcel includes the Public Works Office Building, the Wastewater Treatment Plant, a small lab building, parking for utility trailers and towed equipment, and a fueling station. The fueling station is a double-walled 1,000 gallon gasoline fuel tank on a concrete containment pad that covers approximately 0.02 acre portion of the site and is used as for fueling city vehicles. The WWTP portion of the site is covered under a separate DOE permit. See SWPPP Appendix A-1 for a Vicinity Map and SWPPP Appendix A-2 for site plan and features.

Table 2: Nearby Waterways and Sensitive Areas

Waterway or Sensitive Area	Distance from Site	Direction of Flow from the Site	Runoff Drainage Pathway
MAINTENANCE SHOP			
Snoqualmie River	310 feet	Down gradient to the west	Overland flow, roadside ditches, and catch-basin/pipe conveyance
Public Works Building Complex			
Thayer Creek	340 feet	Down gradient to the west	Overland flow, catch-basin/pipe conveyance
Wetland Area	340 feet	Down gradient to the west	Overland flow, catch-basin/pipe conveyance, channel
Snoqualmie River	1,160 feet	Down gradient to the west	Overland flow, catch-basin/pipe conveyance, channel

4: Potential Spill Sources

A description of each potentially hazardous material brought or generated on-site (including materials used for equipment operation, refueling, maintenance, or cleaning) is found in Table 3.

Table 3: Hazardous Materials Brought or Generated On-Site

Hazardous Materials Brought or Generated On-Site					
Material	Intended Use	Maximum Amount	Staging / Storage Location	Distance & Gradient from Staging / Storage Locations to Sensitive Areas	Secondary Containment Method
Maintenance Shop					
Diesel Fuel	Equipment Fuel	500 gallons	500 gallon above ground tank, under cover	310 feet to Snoqualmie River	Asphalt pad and berm, spill kit
Gasoline	Hand operated equipment	50 gallons	5 gallon cans within a fuel locker, under cover	310 feet to Snoqualmie River	Concrete containment pad, spill kit
Hydraulic Fluid	Vehicle Maintenance	50 gallons	50 gallon covered drum on spill pad, under cover	310 feet to Snoqualmie River	Spill pad, spill kit
Waste Oil (prior to recycling)	Vehicle Maintenance	20 gallons	20 gallon covered drum on spill pad, under cover	310 feet to Snoqualmie River	Spill pad, spill kit
Liquid de-icer	Ice / snow de-icing	1500 gallons	One 1,000 gallon tank and one 200 gallon application tank, under cover	310 feet to the Snoqualmie River	Spill pad, spill kit
Granular de-icer	Ice / snow de-icing	4 tons	Individual sealed bags, on pallets, under cover	310 feet to the Snoqualmie River	Broom
Fertilizer	Landscape Maintenance	200 pounds	Individual sealed bags, on pallets, under cover	310 feet to Snoqualmie River	Broom
Pesticides	Landscape Maintenance	20 gallons	Individual sealed containers, in locker, under cover	310 feet to Snoqualmie River	Spill pad, spill kit
Paint and finishes	Building / vehicle maintenance	40 gallons	Individual sealed containers, in locker, under cover	310 feet to Snoqualmie River	Spill pad, spill kit
Street Sweeping	Collected prior to disposal	1 ton	Containment bay, under cover	310 feet to Snoqualmie River	Broom, spill pad, spill kit
Parked vehicles and equipment	Vehicle fuel, oil, other on-board vehicle fluids	100 gallons	In vehicle (stock) storage with no after-market storage or dispensing tanks	310 feet to Snoqualmie River	Spill pans beneath vehicles as required, spill kit.

Hazardous Materials Brought or Generated On-Site					
Material	Intended Use	Maximum Amount On-site	Staging / Storage Location	Distance & Gradient from Staging / Storage Locations to Sensitive Areas	Secondary Containment Method
Public Works Building Complex					
Gasoline	Vehicle Fuel	1,000 gallons	1,000 gallon double-walled storage tank	340 feet to channel and wetlands, 1,270 feet to the Snoqualmie River	Concrete containment pad, spill kit.
Parked Vehicles and Equipment	Vehicle fuel, oil, and other on-board vehicle fluids	100 gallons	In vehicle (stock) storage with no after-market storage or dispensing tanks	40 feet to wetlands, 1,370 feet to the Snoqualmie River	Spill pans beneath vehicles as required, spill kit.

No equipment at the sites may be used below the ordinary high water line. Decontamination of equipment, if required, will be completed under cover and all decontamination materials and effluent disposed of at an appropriate disposal facility. All materials described in Table 3 will be consumed as part of Public Works activities or disposed of at an appropriate disposal or recycling facility.

5. Pre-Existing Contamination

No pre-existing contamination or spills are known or documented at the Maintenance Shop or Public Works Building Complex.

6. Spill Prevention and Response Training

All Public Works Crew staff are trained in spill prevention and containment, Illicit Discharge Detection and Elimination, spill kit use, and this spill plan. The annual training includes a video presentation, summary of spills or IDDE during the last 12 months, lessons learned, and questions and answers. The Public Works Department tracks and documents all training.

7. Spill Prevention

The following sections summarize spill prevention activities at the City of Duvall for Duvall Public Works Heavy Equipment Maintenance, Storage Yards, and Material Storage Facilities.

- A. Spill response kit contents and location(s) are summarized in Table 4.

Table 4: Spill Response Kit Contents and Locations

Type of Spill Kit	Contents	Location(s)
MAINTENANCE SHOP		
vehicle kits (11)	spill pads, absorbent, bags	Truck No. 1, 2, 3, 4, & 5; F250, F550, Dump Truck, SloMo, Backhoe, & Mini
large spill kit (1)	spill pads, absorbent, bags, booms	Hazardous Waste Area
Fuel Station Spill Kit (1)	spill pads, absorbent, bags, booms	Under covered area adjacent to fuel storage tanks.
FUEL STATION		
Fuel Station Spill Kit (1)	spill pads, absorbent, bags, booms	At Public Works Office front door
vehicle kits (2)	spill pads, absorbent, bags	WWTP Truck 1, 2
large spill kit	spill pads, absorbent, bags, booms	At Public Works Office Garage

- B. Security measures for potential spill sources include locked storage containers and fenced and locked gates around the site perimeters.
- C. Secondary containment practices and structures for hazardous materials are summarized in Table 3.
- D. Methods used to prevent stormwater from contacting hazardous materials include:
- Public Works yard: Keeping all materials under cover and away from stormwater except for non-pollution generating materials (signs, barricades, other non-pollution generating materials).

- b. Public Works Building Complex: Keeping all materials under cover and away from stormwater except for non-pollution generating materials. Maintaining tank and dispenser equipment, keeping containment pad clean, keeping spill kit nearby.
- E. Site inspection is completed and documented weekly as part of the weekly facilities check completed by the Public Works Crew. The weekly facilities check includes visual inspection of the three yards and documentation of spills (if present) and spill cleanup completed (if required).
- F. Equipment and structure maintenance practices include inspection of vehicles and equipment for leaks at the beginning and end of each shift.
- G. No work or refueling of equipment will be performed below the ordinary high water line and no associated spill prevention is required.

8. Spill Response

Typical spill response scenario procedures are listed below. The typical scenarios include a description of the actions that will be taken and the specific on-site, spill response equipment that will be used to assess the spill, secure the area, contain and eliminate the spill source, and clean up and dispose of spilled and contaminated material.

- A. A spill of each type of hazardous material at each location identified in Section 4 – Potential Spill Sources. Note: It is acceptable to combine materials covered by the same response procedures, as long as each material is clearly identified.
 - a. Liquid spills including diesel fuel, gasoline, hydraulic fluid, waste oil, paint and finishes, de-icer, other vehicle/maintenance fluids:
 - i. Contain spill and spill source.
 - ii. Report to Public Works Superintendent/City Engineer immediately. Public Works Superintendent/City Engineer will make appropriate contacts as summarized in Table 1 if spill is reportable as required in Section 2 of this spill plan.
 - iii. Evaluate downstream storm system/ditches/water bodies by visual inspections, sheen, testing utilizing storm system maps (GIS and as-build file, see Engineering Department). Contain any spilled liquid. Remove all contaminated water/sediment using absorbent pads or Vac-Truck as instructed by Public Works Superintendent/City Engineer. Jet clean conveyance and collect all effluent and dispose of at an approved disposal facility.
 - iv. Evaluate spill surfaces by visual inspections, sheen, testing and remove or clean contaminated material. Jet clean (if required) and collect all contaminated material and effluent and dispose of at an approved disposal facility.
 - v. Document spill on Spill Reporting forms (See SWPPP Appendix B) and on the spill tracking spreadsheet.
 - b. Solid spills including granular de-icer, fertilizers, pesticides, street sweepings:
 - i. Contain spill and spill source.
 - ii. Report to Public Works Superintendent/City Engineer immediately. Public Works Superintendent/City Engineer will make appropriate contacts as summarized in Table 1 if spill is reportable as required in Section 2 of this spill plan.
 - iii. Evaluate downstream storm system/ditches/water bodies by visual inspections, sheen, testing utilizing storm system maps (GIS and as-build file, see Engineering Department). Contain any water/stormwater in contact with the spilled material. Remove all

contaminated water/sediment using absorbent pads or Vac-Truck as instructed by Public Works Superintendent/City Engineer. Jet clean conveyance and collect all effluent and dispose of at an approved disposal facility.

- iv. Sweep up spilled material. If spill occurred on wet surfaces or during precipitation evaluate spill surfaces by visual inspections, sheen, testing and remove or clean contaminated material. Jet clean (if required) and collect all contaminated material and effluent and dispose of at an approved disposal facility.
 - v. Document spill on Spill Reporting forms (See SWPPP Appendix B) and on the spill tracking spreadsheet.
- B. Stormwater that has come into contact with hazardous materials follow the procedures in 8.A (above).
- C. A release or spill of any KNOWN pre-existing contamination and contaminant source described in Section 5 – Pre-Existing Contamination: No Pre-Existing Contamination is known.
- D. A release or spill of any UNKNOWN pre-existing contamination and contaminant sources (such as buried pipes or tanks) that may be unexpectedly encountered during project work: When soil contamination is encountered, follow the procedures in 8.A (above). In addition, excavated soil will require stockpiling and sampling to characterize the soil and determine disposal requirements. Soils will be screened prior to stockpiling and contaminated soil will be stockpiled separately from soils showing no indications of contamination. The stockpiles will be in the vicinity of the excavation and will be set up to allow for ease of sampling and load-out once characterization is complete. Stockpiles will be placed on an impervious surface and covered with plastic sheeting when not being worked. Water will be diverted from the stockpile area.

9. Project Site Maps

See SWPPP Appendix A for a Vicinity Map (Appendix A-1) and site maps for the Maintenance Shop (Appendix A-2) and Public Works Building Complex (Appendix A-3). The site plans include:

- A. Site location and boundaries.
- B. Site access roads.
- C. Drainage pathways from the site.
- D. Nearby waterways and sensitive areas.
- E. Hazardous materials, equipment, and decontamination areas identified in Section 4 – Potential Spill Sources.
- F. Pre-existing contamination or contaminant sources describe in Section 5 – Pre-existing Contamination.
- G. Spill prevention and response equipment described in Section 7 – Spill Prevention and Section 8 – Spill Response.

10. Spill Report Form(s)

Spill report forms are contained within SWPPP Appendix B and shall be updated with spill history and response information.

APPENDIX F

Source-Specific Operational and Structural Source Control Best Management Practices (BMPs)

Source-Specific Operational and Structural Source Control Best Management Practices (BMPs)

1. BMPs for Dust Control at Manufacturing Areas

Description of Pollutant Sources.

Industrial material handling activities can generate dust that is typically removed using exhaust systems. This can generate air emissions that can contaminate stormwater. Dusts can be generated at cement and concrete products mixing and wherever powdered materials are handled. Particulate materials that are of concern to air pollution control agencies include grain dust, sawdust, coal, gravel, crushed rock, cement, and boiler fly ash. The objective of this BMP is to reduce the stormwater pollutants caused by dust generation and control.

Pollutant Control Approach.

Prevent dust generation and emissions where practicable, regularly clean-up dust that can contaminate stormwater, and convey dust contaminated stormwater to proper treatment.

Applicable BMPs.

- Clean, as needed, powder material handling equipment and vehicles that can be sources of stormwater pollutants to remove accumulated dust and residue.
- Regularly sweep dust accumulation areas that can contaminate stormwater. Sweeping should be conducted using vacuum filter equipment to minimize dust generation and to ensure optimal dust removal.
- In manufacturing operations, train employees to carefully handle powders to minimize the generation of dust where stormwater is likely to be contaminated.
- Consider using dust filtration / collection systems such as bag house filters, cyclone separators, etc., to control vented dust emissions that could contaminate stormwater. Control of zinc dusts in rubber production is one example.
- Use water spray to flush dust accumulations to sanitary sewers were allowed by the local sewer authority or to other appropriate treatment system. approved dust suppressants such as those listed in Ecology Publication *Techniques for Dust Prevention and Suppression*, #96-433. (Ecology, 1996). Application of some products may not be appropriate in close proximity to receiving waters or conveyances close to receiving waters. For more information, check with an Ecology regional office or the local jurisdiction.

Treatment BMPs, if required (See Section E.10.).

For removal of TSS in stormwater, use sedimentation basins, wet ponds, wet vaults, catch basin filters, vegetated filter strips, or equivalent sediment removal BMPs (3, 4).

2. BMPs for Fueling At Dedicated Stations

Description of Pollutant Sources.

Typically, stormwater contamination at fueling stations is caused by leaks / spills of fuels, lube oils, radiator coolants, and vehicle washwater.

Pollutant Control Approach.

Cover with roof or canopy and conduct the fueling in an impervious containment area or use a spill pad.

Operational BMPs.

- Prepare an emergency spill response and cleanup plan (see applicable spill control BMPs) and have designated trained person(s) available either on site or on call at all times to promptly and properly implement that plan

and immediately cleanup all spills. Keep suitable cleanup materials, such as dry adsorbent materials, on site to allow prompt cleanup of a spill.

- Train employees on the proper use of fuel dispensers. Post signs in accordance with the Uniform Fire Code (UFC). Post “No Topping Off” signs (topping off gas tanks causes spillage and vents gas fumes to the air). Make sure that the automatic shutoff on the fuel nozzle is functioning properly.
- The person conducting the fuel transfer must be present at the fueling pump during fuel transfer, particularly at unattended or self-serve stations.
- Keep drained oil filters in a suitable container or drum.

Structural Source Control BMPs.

- Design the fueling island to control spills (dead-end sump or spill control separator in compliance with the UFC) and to treat collected stormwater and / or wastewater to required levels. Slope the concrete containment pad around the fueling island toward drains — either trench drains, catch basins, and / or a dead-end sump. The slope of the drains shall not be less than 1 percent (Section 7901.8 of the UFC). Drains to treatment shall have a shutoff valve, which must be closed in the event of a spill. The spill control sump must be sized in compliance with Section 7901.8 of the UFC; or
- Design the spill containment pad of the fueling island with a sill or berm raised to a minimum of four inches (Section 7901.8 of the UFC) to prevent the runoff of spilled liquids and to prevent run-on of stormwater from the surrounding area. Raised sills are not required at the open-grate trenches that connect to an approved drainage-control system.
- The fueling pad must be paved with Portland cement concrete, or equivalent. Asphalt is not considered an equivalent material.
- The fueling island must have a roof or canopy to prevent the direct entry of precipitation onto the spill containment pad (see Figure F.1). The roof or canopy should, at a minimum, cover the spill containment pad (within the grade break or fuel dispensing area) and preferably extend several additional feet to reduce the introduction of windblown rain. Convey all roof drains to storm drains outside the fueling containment area.
- If treatment of the runoff is required stormwater collected on the fuel island containment pad must be conveyed to a sanitary sewer system, if approved by the Wastewater Treatment Plant Operator; or to an appropriate treatment system such as an oil / water separator, media filter, biofilter, or equivalent treatment. Discharges from treatment systems to storm drains or surface water or to the ground must not display ongoing or recurring visible sheen and must not contain greater than a benchmark value of oil and grease-petroleum.
- Alternatively, stormwater collected on the fuel island containment pad may be collected and held for proper off-site disposal.
- Conveyance of any fuel-contaminated stormwater to a sanitary sewer must be approved by the local sewer authority and must comply with pretreatment regulations (WAC 173-216-060). These regulations prohibit discharges that could cause fire or explosion. An explosive or flammable mixture is defined under state and federal pretreatment regulations, based on a flash point determination of the mixture. If contaminated stormwater is determined not to be explosive, then it could be conveyed to a sanitary sewer system.
- Transfer the fuel from the delivery tank trucks to the fuel storage tank in impervious contained areas and ensure that appropriate overflow protection is used. Alternatively, cover nearby storm drains during the filling process and use drip pans under all hose connections.

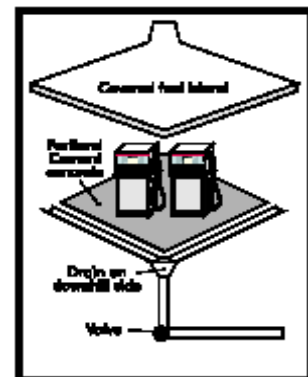


Figure F.1: Covered Fuel Island

Additional BMPs for vehicles ten feet in height or greater.

A roof or canopy may not be practicable at fueling stations that regularly fuel vehicles that are ten feet in height or greater. At those types of fueling facilities, the following BMPs apply, as well as the applicable BMPs and fire prevention (UFC requirements) of this BMP for fueling stations.

- If a roof or canopy is impractical the concrete fueling pad must be equipped with emergency spill control, which includes a shutoff valve for the drainage from the fueling area. The valve must be closed in the event of a spill. An electronically actuated valve is preferred to minimize the time lapse between spill and containment. Spills must be cleaned up and disposed off site in accordance with BMPs for Spills of Oil and Hazardous Substances.
- If treatment is required the valve may be opened to convey contaminated stormwater to a sanitary sewer, if approved by the Wastewater Treatment Plant Operator, or to oil / water separator, media filter, biofilter, or equivalent treatment. Discharges from treatment systems to storm drains or surface water or to the ground must not display ongoing or recurring visible sheen and must not contain greater than a benchmark value of oil and grease.

3. BMPs for Non-stormwater Illicit Connections to Storm Drains

Description of Pollutant Sources.

Illicit connections are unpermitted sanitary or process wastewater discharges to a storm drain or to a surface water, rather than to a sanitary sewer, industrial process wastewater or other appropriate treatment. Examples of non-stormwater discharges include any water used directly in the manufacturing process (process water), air conditioner condensate, non-contact cooling water, vehicle wash water, and sanitary wastewater.

Pollutant Control Approach.

Identify and eliminate unpermitted discharges within 30 days, or obtain an NPDES permit, where necessary.

Operational BMPs.

- Identify and eliminate unpermitted non-stormwater discharges to storm drains, ground water, or surface water; and, convey unpermitted discharges to a sanitary sewer if allowed by the Wastewater Treatment Plant Operator, or to other approved treatment; and, obtain appropriate permits for these discharges. Call the appropriate Ecology regional office if you discover a discharge of non-stormwater discharging to a surface water. ***The discharge must be eliminated within 30 days***, or you may need to apply for Ecology's individual NPDES or State Waste Discharge Permit. Unless the discharge is eliminated or application is made for permit coverage, you are subject to enforcement action by Ecology or third party lawsuits.
- Conduct a survey of sanitary and industrial wastewater, condensate, cooling water, and any other contaminant discharge connections to storm drains and to surface water as follows:
 - Conduct a field survey of buildings, particularly older buildings, and other industrial areas to locate storm drains from buildings and paved surfaces. Note where these join the public storm drain(s).
 - During non-stormwater conditions inspect each storm drain for non-stormwater discharges. Record the locations of all non-stormwater discharges. Include all permitted discharges.
 - If useful, prepare a map of each area as it is to be surveyed. Show on the map the known location of storm drains, sanitary sewers, and permitted and unpermitted discharges. Aerial photos may be useful. Check records such as piping schematics to identify known side sewer connections and show these on the map. Consider using smoke, dye, or chemical analysis tests to detect connections between two conveyance systems (e.g., process water and stormwater). If desirable, conduct TV inspections of the storm drain and record the footage on videotape. Compare the observed locations of connection with the information on the map and revise the map accordingly. Note suspect connections that are inconsistent with the field survey. Several of the common dry weather inspection methods are described below.

Common Dry Weather Methods for Locating Non-stormwater Discharges.

- Review a sewer map or plant schematic (a map of pipes and drainage systems used to carry process wastewater, non-contact cooling water, air conditioner condensate, and sanitary wastes (bathrooms, sinks, etc.). It is not uncommon to find that accurate and current information is not available. If you have an accurate and current map, simply examine the pathways of the different water circuits cited above. Determine where interior floor drains discharge. The drain(s) may be connected to the stormwater drainage system. If so, they **must** be disconnected and redirected to the sanitary sewer. Contact your Wastewater Treatment Plant Operator before redirecting flow to the sanitary sewer.
- Observe all discharge points during dry weather for odors, discolorations, abnormal flow or conditions. As a rule, the discharge point should be dry during a period of extended dry weather since a stormwater collection system should only collect stormwater.
- Smoke testing of wastewater and stormwater collection and conveyance is used to detect connections between the two systems. During dry weather, the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet, sink, floor drain, wastewater conveyance, etc., indicates that there may be a connection with the stormwater system. If so, they must be disconnected and redirected to the sanitary sewer. Contact your Wastewater Treatment Plant Operator before redirecting flow to the sanitary sewer.
- A dye test can be performed by simply releasing a dye into floor drains, sinks, basins, or other potential contaminant sources that may discharge to a surface water or storm sewer system. Examine discharge points in the stormwater collection system or surface water for discoloration.

4. BMPs for Pesticide Management

Description of Pollutant Sources.

Runoff from pesticide application areas can cause contaminants of stormwater. Pesticide applications at access roads and yard areas include sap stain and insect control on lumber and logs, rooftop moss removal, and killing nuisance rodents. Leaching and dripping from treated parts, container leaks, product misuse, and outside storage of pesticide contaminated materials and equipment can cause stormwater contamination.

Pollutant Control Approach.

Develop and implement an Integrated Pest Management Plan (IPM) and use pesticides only as a last resort. If pesticides / herbicides are used they must be carefully applied in accordance with label instructions on U.S. Environmental Protection Agency (EPA) registered materials.

Operational BMPs for the Use of Pesticides.

- Develop and implement an IPM (Reference 3) and use pesticides only as a last resort. An IPM program may consist of the following steps:
 - Step 1. Correctly identify problem pests and understand their life cycle.
 - Step 2. Establish tolerance thresholds for pests.
 - Step 3. Monitor to detect and prevent pest problems.
 - Step 4. Modify the maintenance program to promote healthy plants and discourage pests.
 - Step 5. Use cultural, physical, mechanical, or biological controls first if pests exceed the tolerance thresholds.
 - Step 6. Evaluate and record the effectiveness of the control and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.
- Implement a pesticide-use plan and include at a minimum: a list of selected pesticides and their specific uses; brands, formulations, application methods and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods; and monitoring, record keeping, and public notice

procedures. All procedures shall conform to the requirements of Chapter 17.21 RCW and Chapter 16-228 WAC. Include the following BMPs:

- Choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and / or have properties that strongly bind it to the soil. Any pest control used should be conducted at the life stage when the pest is most vulnerable. Any method used should be site-specific and not used wholesale over a wide area.
 - Apply the pesticide according to label directions. Under no conditions shall pesticides be applied in quantities that exceed the manufacturer's instructions.
 - Mix the pesticides and clean the application equipment in an area where accidental spills will not enter surface or ground waters and will not contaminate the soil.
 - Store pesticides in enclosed areas or in covered impervious containment. Ensure that pesticide contaminated stormwater or spills / leaks of pesticides are not discharged to storm drains. Do not hose down the paved areas to a storm drain or conveyance ditch. Store and maintain appropriate spill cleanup materials in a location known to all near the storage area.
 - Clean up any spilled pesticides and ensure that the pesticide contaminated waste materials are kept in designated covered and contained areas.
 - Include immediate shutoff of the pesticide application equipment in the event of an emergency.
 - Do not spray pesticide within 100 feet of open waters including wetlands, ponds, streams, sloughs, and any drainage ditch or channel that leads to open water except when approved by Ecology or the City of Duvall. All sensitive areas including wells, creeks, and wetlands must be flagged prior to spraying.
 - As by City of Duvall or by Ecology, complete public posting of the area to be sprayed prior to the application.
 - Spray applications should be conducted only during weather conditions as specified in the label direction and applicable local and state regulations. Do not apply during rain or immediately before expected rain.
 - Consider alternatives to the use of pesticides such as covering or harvesting weeds, substituting vegetative growth, and manually controlling weeds and removing moss.
 - Rinse water from equipment cleaning and / or triple rinsing of pesticide containers should be used as product or recycled into product.
 - Once a pesticide is applied, its effectiveness should be evaluated for possible improvement. Records should be kept showing the applicability and inapplicability of the pesticides considered. An annual evaluation procedure should be developed including a review of the effectiveness of pesticide applications, impact on buffers and sensitive areas (including potable wells), public concerns, and recent toxicological information on pesticides used proposed for use.
 - If individual or public potable wells are located in the proximity of commercial pesticide applications, contact the regional Ecology hydrogeologist to determine if additional pesticide application control measures are necessary.
- Consider the use of soil amendments, such as compost, that are known to control some common diseases in plants such as Pythium root rot, ashy stem blight, and parasitic nematodes. The following are three possible mechanisms for disease control by compost addition (USEPA Publication 530-F-9-044):
 - Successful competition for nutrients by antibiotic production.
 - Successful predation against pathogens by beneficial microorganism.
 - Activation of disease-resistant genes in plants by composts.

Note: Installing an amended soil / landscape system can preserve both the plant system and the soils system more effectively. This type of approach provides a soil / landscape system with adequate depth, permeability, and organic matter to sustain itself and continue working as an effective stormwater infiltration system and a sustainable nutrient cycle.

For more information, contact the WSU Extension Home-Assist Program, (253) 445-4556, or Bio-Integral Resource Center (BIRC), P.O. Box 7414, Berkeley, CA 94707, or the Washington Department of Ecology to

obtain “Hazardous Waste Pesticides” (Publication #89-41); and/or EPA to obtain a publication entitled “Suspended, Canceled and Restricted Pesticides” which lists all restricted pesticides and the specific uses that are allowed. Valuable information from these sources may also be available on the internet.

5. BMPs for Loading and Unloading Areas for Liquid or Solid Material

Description of Pollutant Sources.

Loading and unloading of liquid and solid materials are typically conducted at shipping and receiving, outside storage, fueling areas, etc. Materials transferred can include products, raw materials, intermediate products, waste materials, fuels, and scrap metals. Leaks and spills of fuels, oils, powders, organics, heavy metals, salts, acids, alkalis, etc., during transfer are potential causes of stormwater contamination. Spills from hydraulic line breaks are a common problem at loading docks.

Pollutant Control Approach.

Cover and contain the loading / unloading area where necessary to prevent run-on of stormwater and run-off of contaminated stormwater.

Operational BMPs.

At All Loading / Unloading Areas

- A significant amount of debris can accumulate at outside, uncovered loading / unloading areas. Sweep these surfaces frequently to remove material that could otherwise be washed off by stormwater. Sweep outside areas that are covered for a period of time by containers, logs, or other material after the areas are cleared.
- Place drip pans, or other appropriate temporary containment device, at locations where leaks or spills may occur such as hose connections, hose reels, and filler nozzles. Drip pans shall always be used when making and breaking connections (see Figure F.2). Check loading/unloading equipment such as valves, pumps, flanges, and connections regularly for leaks and repair as needed.

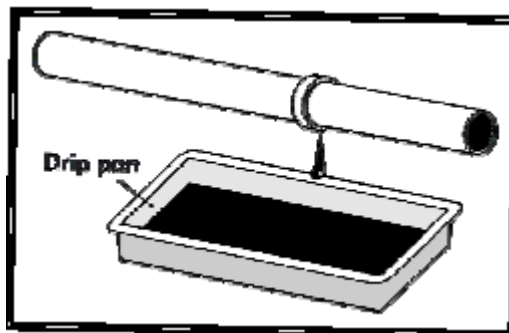


Figure F.2: Drip Pan

At Tanker Truck and Rail Transfer Areas to Above / Below-ground Storage Tanks

- To minimize the risk of accidental spillage, prepare an operations plan that describes procedures for loading / unloading. Train the employees, especially fork lift operators, in its execution and post it or otherwise have it readily available to employees.
- Prepare and implement an emergency spill cleanup plan for the facility (See BMP Spills of Oil and Hazardous Substances) which includes the following BMPs:
 - Ensure the cleanup of liquid / solid spills in the loading/unloading area immediately, if a significant spill occurs, and, upon completion of the loading / unloading activity, or, at the end of the working day.
 - Retain and maintain an appropriate oil spill cleanup kit on-site for rapid cleanup of material spills.
 - Ensure that an employee trained in spill containment and cleanup is present during loading / unloading.

At Rail Transfer Areas to Above / Below-Ground Storage

Install a drip pan system as illustrated (see Figure F.3) within the rails to collect spills / leaks from tank cars and hose connections, hose reels, and filler nozzles.

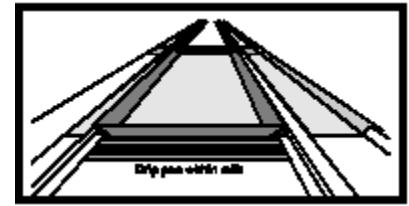


Figure F.3: Drip Pan Within Rails

Loading / Unloading from / to Marine Vessels

Facilities and procedures for the loading and unloading of petroleum products must comply with Coast Guard requirements.

Structural Source Control BMPs.

At All Loading / Unloading Areas

- Consistent with Uniform Fire Code requirements and to the extent practicable, conduct unloading or loading of solids and liquids in a manufacturing building, under a roof, lean-to, or other appropriate cover.
- Berm, dike, and / or slope the loading / unloading area to prevent run-on of stormwater and to prevent the run-off or loss of any spilled material from the area.
- Large loading areas frequently are not curbed along the shoreline. As a result, stormwater passes directly off the paved surface into surface water. Place curbs along the edge or slope edge such that the stormwater can flow to an internal storm drain system that leads to an approved treatment BMP.
- Pave and slope loading / unloading areas to prevent the pooling of water. The use of catch basins and drain lines within the interior of the paved area must be minimized as they will frequently be covered by material, or they should be placed in designated “alleyways” that are not covered by material, containers, or equipment.
- For the transfer of pollutant liquids in areas that cannot contain a catastrophic spill, consider installing an automatic shutoff system in case of unanticipated off-loading interruption (e.g., coupling break, hose rupture, overfill, etc.).

At Loading and Unloading Docks

- Install / maintain overhangs or door skirts that enclose the trailer end (see Figures F.4 and F.5) to prevent contact with rainwater.
- Design the loading / unloading area with berms, sloping, etc., to prevent the run-on of stormwater.
- Retain on-site the necessary materials for rapid cleanup of spills.

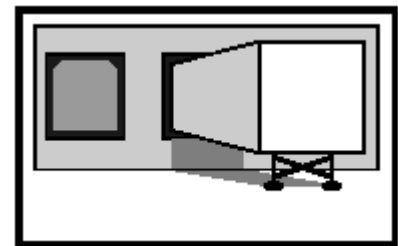


Figure F.4: Loading Dock with Door Skirt

At Tanker Truck Transfer Areas to Above / Below-ground Storage Tanks

- Pave the area on which the transfer takes place. If any transferred liquid, such as gasoline, is reactive with asphalt, pave the area with Portland cement concrete.
- Slope, berm, or dike the transfer area to a dead-end sump, spill containment sump, a spill control (SC) oil / water separator, or other spill control device. The minimum spill retention time should be 15 minutes at the greater flow rate of the highest fuel dispenser nozzle through-put rate, or the peak flow rate of the 6-month, 24-hour storm event over the surface of the containment pad, whichever is greater. The volume of the spill containment sump should be a minimum of 50 gallons with an adequate grit sedimentation volume.

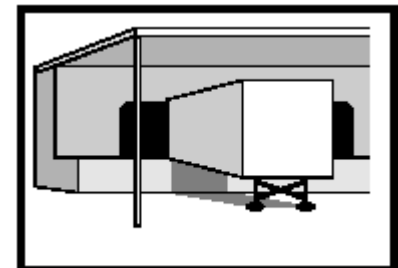


Figure F.5: Loading Dock with Overhang

6. BMPs for Maintenance and Repair of Vehicles and Equipment

Description of Pollutant Sources.

Pollutant sources include parts / vehicle cleaning, spills / leaks of fuel and other liquids, replacement of liquids, outdoor storage of batteries / liquids / parts, and vehicle parking.

Pollutant Control Approach.

Control of leaks and spills of fluids using good housekeeping and cover and containment BMPs.

Operational BMPs.

- Inspect for leaks all incoming vehicles, parts, and equipment stored temporarily outside.
- Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid containing parts or removal or transfer of liquids.
- Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store cracked batteries in a covered non-leaking secondary containment system.
- Empty oil and fuel filters before disposal. Provide for proper disposal of waste oil and fuel.
- Do not pour / convey washwater, liquid waste, or other pollutant into storm drains or to surface water. Do not hose down work areas to storm drains. Use dry methods for cleaning leaked fluids. Check with the Wastewater Treatment Plant Operator for approval to convey to a sanitary sewer.
- Do not connect maintenance and repair shop floor drains to storm drains or to surface water. To allow for snowmelt during the winter, a drainage trench with a sump for particulate collection can be installed and used only for draining the snowmelt and not for discharging any vehicular or shop pollutants.
- Consider storing damaged vehicles inside a building or other covered containment until all liquids are removed. Remove liquids from vehicles retired for scrap.
- Consider cleaning parts with aqueous detergent based solutions or non-chlorinated solvents such as kerosene or high flash mineral spirits, and / or use wire brushing or sand blasting whenever practicable. Avoid using toxic liquid cleaners such as methylene chloride, 1,1,1-trichloroethane, trichloroethylene, or similar chlorinated solvents. Choose cleaning agents that can be recycled.
- Inspect all BMPs regularly, particularly after a significant storm. Identify and correct deficiencies to ensure that the BMPs are functioning as intended.

Structural Source Control BMPs.

- Conduct all maintenance and repair of vehicles and equipment in a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and run-off of contaminated stormwater.
- Park large mobile equipment, such as log stackers, in a designated contained area.

Treatment BMPs, if required.

Contaminated stormwater run-off from vehicle staging and maintenance areas may be conveyed to a sanitary sewer, if allowed by the Wastewater Treatment Plant Operator, or to an API or CP oil and water separator followed by a basic treatment BMP, media filtration systems, or other equivalent oil treatment system (3, 4).

7. BMPs for Maintenance of Stormwater Drainage and Treatment Systems

Description of Pollutant Sources.

Facilities include roadside catch basins, conveyance systems, detention facilities such as ponds and vaults, oil and water separators, biofilters, settling basins, infiltration systems, and all other types of stormwater treatment systems. Oil and grease, hydrocarbons, debris, heavy metals, sediments, and contaminated water are found in catch basins, oil and water separators, settling basins, etc.

Pollutant Control Approach.

Provide maintenance and cleaning of debris, sediments, and oil from stormwater collection, conveyance, and treatment systems to obtain proper operation.

Operational BMPs.

Maintain stormwater treatment facilities according to the O&M procedures presented in the King County Surface Water Design Manual, Standards, and the following BMPs:

- Inspect and clean treatment BMPs, conveyance systems, and catch basins as needed, and determine whether improvements in O&M are needed.
- Promptly repair any deterioration threatening the structural integrity of the facilities. These include replacement of clean-out gates, catch basin lids, and rock in emergency spillways.
- Ensure that storm sewer capacities are not exceeded and that heavy sediment discharges to the sewer system are prevented.
- Regularly remove debris and sludge from BMPs used for peak-rate control, treatment, etc., and discharge to a sanitary sewer if approved by the Wastewater Treatment Plant Operator or truck to a local or state government approved disposal site.
- Post warning signs; “Dump No Waste - Drains to Ground Water,” “Streams,” “Lakes,” or emboss on or adjacent to all storm drain inlets *where practical*.

8. BMPs for Outside Manufacturing Activities

Description of Pollutant Sources.

Manufacturing pollutant sources include outside process areas, stack emissions, and areas where manufacturing activity has taken place in the past and significant pollutant materials remain and are exposed to stormwater.

Pollution Control Approach.

Cover and contain outside manufacturing and prevent stormwater run-on and contamination, where feasible.

Operational BMP.

Sweep paved areas regularly, as needed, to prevent contamination of stormwater.

Structural Source Control BMPs.

- Alter the activity by eliminating or minimizing the contamination of stormwater.
- Enclose the activity (see Figure F.6). If possible, enclose the manufacturing activity in a building.
- Cover the activity and connect floor drains to a sanitary sewer, if approved by the Wastewater Treatment Plant Operator. Berm or slope the floor as needed to prevent drainage of pollutants to outside areas. (Figure F.7).
- Isolate and segregate pollutants as feasible. Convey the segregated pollutants to a sanitary sewer, process treatment or a dead-end sump depending on available methods and applicable permit requirements.

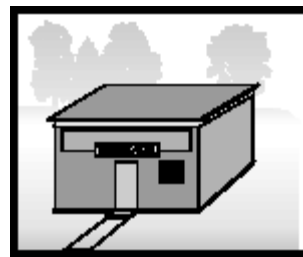


Figure F.6: Enclose the Activity

9. BMPs for Mobile Fueling of Vehicles and Heavy Equipment

Description of Pollutant Sources.

Mobile fueling, also known as fleet fueling, wet fueling, or wet hosing, is the practice of filling fuel tanks of vehicles by tank trucks that are driven to the yards or sites where the vehicles to be fueled are located. Diesel fuel is considered as a Class II Combustible Liquid, whereas gasoline is considered as a Flammable Liquid.



Figure F.7: Cover the Activity

Pollutant Control Approach.

Proper training of the fueling operator and the use of spill / drip control and reliable fuel transfer equipment with backup shutoff valving are typically needed.

Note that some local fire departments may have restrictions on mobile fueling practices.

Operational BMPs.

- Ensure that all mobile fueling operations are approved by the local fire department and comply with local and Washington State fire codes.
- In fueling locations that are in close proximity to sensitive aquifers, designated wetlands, wetland buffers, or other waters of the state, approval by local jurisdictions is necessary to ensure compliance with additional local requirements.
- Ensure the compliance with all 49 CFR 178 requirements for DOT 406 cargo tanker. Documentation from a Department of Transportation (DOT) Registered Inspector shall be proof of compliance.
- Ensure the presence and the constant observation / monitoring of the driver / operator at the fuel transfer location at all times during fuel transfer and ensure that the following procedures are implemented at the fuel transfer locations:
 - Locating the point of fueling at least 25 feet from the nearest storm drain or inside an impervious containment with a volumetric holding capacity equal to or greater than 110 percent of the fueling tank volume, or covering the storm drain to ensure no inflow of spilled or leaked fuel. Storm drains that convey the inflow to a spill control separator approved by the City of Duvall and the fire department need not be covered. Potential spill / leak conveyance surfaces must be impervious and in good repair.
 - Placing a drip pan or an absorbent pad under each fueling location prior to and during all dispensing operations. The pan (must be liquid tight) and the absorbent pad must have a capacity of 5 gallons. Spills retained in the drip pan or the pad need not be reported.
 - The handling and operation of fuel transfer hoses and nozzle, drip pan(s), and absorbent pads as needed to prevent spills / leaks of fuel from reaching the ground, storm drains, and receiving waters.
 - Not extending the fueling hoses across a traffic lane without fluorescent traffic cones, or equivalent devices, conspicuously placed so that all traffic is blocked from crossing the fuel hose.
 - Removing the fill nozzle and cessation of filling when the automatic shut-off valve engages. Do not allow automatic shut-off fueling nozzles to be locked in the open position.
 - Not “topping off” the fuel receiving equipment.
- Provide the driver / operator of the fueling vehicle with:
 - Adequate flashlights or other mobile lighting to view fill openings with poor accessibility. Consult with local fire department for additional lighting requirements.
 - Two-way communication with his / her home base.
- Train the driver / operator annually in spill prevention and cleanup measures and emergency procedures. Make all employees aware of the significant liability associated with fuel spills.
- The fueling operating procedures should be properly signed and dated by the responsible manager, distributed to the operators, retained in the organization files, and made available in the event an authorized government agency requests a review.

- Ensure that the local fire department (911) and the appropriate regional office of the Department of Ecology are immediately notified in the event of any spill entering the surface or ground waters. Establish a “call down list” to ensure the rapid and proper notification of management and government officials should any significant amount of product be lost off-site. Keep the list in a protected by readily accessible location in the mobile fueling truck. The “call down list” should also pre-identify spill response contractors available in the area to ensure the rapid removal of significant product spillage into the environment.
- Maintain in all fueling vehicles a minimum of the following spill cleanup materials that are readily available for use:
 - Non-water absorbents capable of absorbing 15 gallons of diesel fuel.
 - A storm drain plug or cover kit.
 - A non-water absorbent containment boom of a minimum 10 feet in length with a 12-gallon absorbent capacity.
 - A non-metallic shovel.
 - Two five-gallon buckets with lids.
- Maintain and replace equipment on fueling vehicles, particularly hoses and nozzles, at established intervals to prevent failures.

Structural Source Control BMP.

Automatic fuel transfer shut-off nozzles; and, an adequate lighting system at the filling point.

10. BMPs for Painting / Finishing / Coating of Vehicles / Boats / Buildings / Equipment

Description of Pollutant Sources.

Surface preparation and the application of paints, finishes and / or coatings to vehicles, buildings, and / or equipment outdoors can be sources of pollutants. Potential pollutants include organic compounds, oils and greases, heavy metals, and suspended solids.

Pollutant Control Approach.

Cover and contain painting and sanding operations and apply good housekeeping and preventive maintenance practices to prevent the contamination of stormwater with painting oversprays and grit from sanding.

Operational BMPs.

- Train employees in the careful application of paints, finishes, and coatings to reduce misuse and over spray. Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly clean and temporarily store collected debris daily.
- Do not conduct spraying, blasting, or sanding activities over open water or where wind may blow paint into water.
- Wipe up spills with rags and other absorbent materials immediately. On dock areas sweep rather than hose down debris. If hosing is conducted, collect any hose water generated and convey to appropriate treatment and disposal. Do not hose down the area to a storm drain or receiving water or conveyance ditch to receiving water.
- Use a storm drain cover, filter fabric, or similarly effective run-off control device if dust, grit, washwater, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the workday. Collect contaminated run-off and solids and properly dispose of such wastes before removing the containment device(s) at the end of the workday.
- Use a ground cloth, pail, drum, drip pan, tarpaulin, or other protective device for activities such as paint mixing and tool cleaning outside or where spills can contaminate stormwater.
- Properly dispose of all wastes and prevent all uncontrolled releases to the air, ground, or water.

- Clean brushes and tools covered with non-water-based paints, finishes, or other materials in a manner that allows collection of used solvents (e.g., paint thinner, turpentine, xylol) for recycling or proper disposal.
- Store toxic materials under cover (tarp, etc.) during precipitation events and when not in use to prevent contact with stormwater.

Structural Source Control BMPs.

Enclose and / or contain all work while using a spray gun or conducting sand blasting and in compliance with applicable air pollution control, OSHA, and WISHA requirements. Do not conduct outside spraying, grit blasting, or sanding activities during windy conditions which render containment ineffective.

11. BMPs for Roof / Building Drains at Manufacturing and Commercial Buildings

Description of Pollutant Sources.

Stormwater run-off from roofs and sides of manufacturing buildings can be sources of pollutants caused by leaching of roofing materials, building vents, and other air emission sources. Vapors and entrained liquid and solid droplets / particles have been identified as potential pollutants in roof / building runoff. Metals, solvents, acidic / alkaline pH, BOD, and organics are some of the pollutant constituents identified.

Pollutant Control Approach.

Evaluate the potential sources of stormwater pollutants and apply source control BMPs where practicable.

Operational Source Control BMPs.

- If leachates and / or emissions from buildings are suspected sources of stormwater pollutants, then sample and analyze the stormwater draining from the building.
- If a roof / building stormwater pollutant source is identified, implement appropriate source control measures such as air pollution control equipment, selection of materials, operational changes, material recycle, and process changes.

12. BMPs for Soil Erosion and Sediment Control at Industrial Sites

Description of Pollutant Sources.

Industrial activities on soil areas; exposed and disturbed soils; steep grading; etc. can be sources of sediments that can contaminate stormwater run-off.

Pollutant Control Approach.

Limit the exposure or erodible soil, stabilize or cover erodible soil where necessary to prevent erosion, and / or provide treatment for stormwater contaminated with TSS caused by eroded soil.

Cover BMP Options.

- Vegetative cover such as grass, trees, and shrubs on erodible soil areas, or
- Covering with mats such as clear plastic, jute, synthetic fiber, and / or
- Preservation of natural vegetation including grass, trees, shrubs, and vines.

Structural Practice Options.

Consider biofilter, sedimentation basin, silt fence, gravel filter berm and proper grading. For other BMPs and design information, refer to the King County Surface Design Manual and the Public Works Standards.

13. BMPs for Spills of Oil and Hazardous Substances

Description of Pollutant Sources.

Owners or operators of facilities engaged in drilling, producing, gathering, storing, processing, transferring, distributing, refining or consuming oil and / or oil products are required by federal law to have a spill prevention and

control plan if the storage capacity of the facility, which is not buried, is 1,320 gallons or more of oil, or any single container with a capacity in excess of 660 gallons and which, due to its location, could reasonably be expected to discharge oil in harmful quantities, as defined in 40 CFR Part 110, into or upon the navigable waters of the United States or adjoining shorelines {40 CFR 112.1 (b)}. Onshore and offshore facilities, which, due to their location, could not reasonably be expected to discharge oil into or upon the navigable waters of the United States or adjoining shorelines, are exempt from these regulations {40 CFR 112.1(1)(i)}. Owners of businesses that produce dangerous wastes are also required by state law to have a spill control plan. The federal definition of oil is oil of any kind or any form, including, but not limited to petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

Pollutant Control Approach.

Maintain, update, and implement an oil spill prevention / cleanup plan.

Operational BMPs.

Industries that are required to prepare and implement and emergency spill cleanup plan shall implement the following:

- Prepare an emergency spill control plan, which includes:
 - A description of the facility including the owner's name and address.
 - The nature of the activity at the facility.
 - The general types of chemicals used or stored at the facility.
 - A site plan showing the location of storage areas for chemicals, the locations of storm drains, the areas draining to them, and the location and description of any devices to stop spills from leaving the site such as positive control valves.
 - Cleanup procedures.
 - Notification procedures to be used in the event of a spill, such as notifying key personnel. Agencies such as Ecology, local fire department, Washington State Patrol, and the Wastewater Treatment Plant Operator, shall be notified.
 - The name of the designated person with overall spill cleanup and notification responsibility.
- Train key personnel in the implementation of the Emergency Spill Control Plan. Prepare a summary of the plan and post it at appropriate points in the building, identifying the spill cleanup coordinators, location of cleanup kits, and phone numbers of regulatory agencies to be contacted in the event of a spill.
- Update the spill control plan regularly.

14. BMPs for Storage of Liquid, Food Waste, or Dangerous Wastes in Containers

Description of Pollutant Sources.

Steel and plastic drums with volumetric capacities of 55 gallons or less are typically used at industrial facilities for container storage of liquids and powders. The BMPs specified below apply to container(s) located outside a building used for temporary storage of accumulated food wastes, vegetable or animal grease, used oil, liquid feedstock or cleaning chemical, or Dangerous Wastes (liquid or solid) unless the business is permitted by Ecology to store the wastes. Leaks and spills of pollutant materials during handling and storage are the primary sources of pollutants. Oil and grease, acid/alkali pH, BOD, COD are potential pollutant constituents.

Pollutant Control Approach.

Store containers in impervious containment under a roof or other appropriate cover, or in a building. For roll-containers (for example dumpsters) that are picked up directly by the collection truck, a filet can be placed on both sides of the curb to facilitate moving the dumpster. If a storage area is to be used on site for less than 30 days, a portable temporary secondary system like that shown in Figure F.8 can be used in lieu of a permanent system as described above.

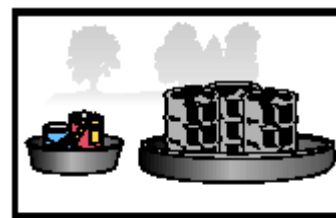


Figure F.8: Secondary Containment System

Operational BMPs.

- Place tight-fitting lids on all containers.
- Place drip pans beneath all mounted container taps and at all potential drip and spill locations during filling and unloading of containers.
- Inspect container storage areas regularly for corrosion, structural failure of piping systems. Check containers daily for leaks / spills. Replace containers and replace and tighten bungs in drums as needed.
- Businesses accumulating dangerous wastes that do not contain free liquids need only to store these wastes in a sloped designated area with the containers elevated or otherwise protected from stormwater run-on.
- Drums stored in an area where unauthorized persons may gain access must be secured in a manner that prevents accidental spillage, pilferage, or any unauthorized use (see Figure F.9).
- If the material is a dangerous waste, the business owner must comply with any additional Ecology requirements.
- Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code.
- Cover dumpsters, or keep them under cover such as a lean-to. To prevent the entry of stormwater replace or repair leaking garbage dumpsters.
- Drain dumpsters and / or dumpster pads to sanitary sewer. Keep dumpster lids closed. Install waterproof liners.

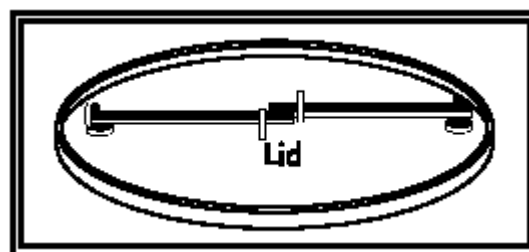


Figure F.9: Locking System for Drum

Structural Source Control BMPs.

- Keep containers with dangerous waste, food waste, or other potential pollutant liquids inside a building unless this is impracticable due to site constraints or Uniform Fire Code requirements.
- Store containers in a designated area, which is covered, bermed or diked, paved, and impervious in order to contain leaks and spills (see Figure F.10). The secondary containment shall be sloped to drain into a dead-end sump for the collection of leaks and small spills.
- For liquid wastes, surround the containers with a dike as illustrated in Figure 10. The dike must be of sufficient height to provide a volume or 110 percent of the volume contained in the largest container, whichever is greater, or, if a single container, 110 percent of the volume of that container.

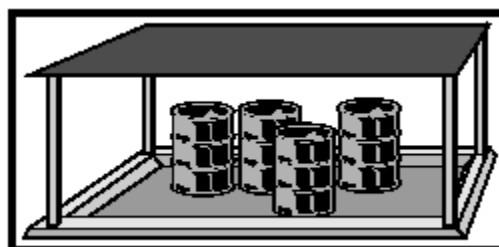


Figure F.10: Covered and Bermed Containment A

Where material is temporarily stored in drums, a containment system can be used as illustrated, in lieu of the above system (see Figure 8).

- Place containers mounted for direct removal of a liquid chemical for use by employees inside a containment area as described above. Use a drip pan during liquid transfer.

Treatment BMP, if required (See Section E.10.)

- For contaminated stormwater in the containment area connect the sump outlet to a sanitary sewer, if approved by the Wastewater Treatment Plant Operator, or to appropriate treatment such as an API or CP oil / water separator, catch basin filter, or other appropriate system (3, 4). Equip the sump outlet with a normally closed valve to prevent the release of spilled or leaked liquids, especially flammables (compliance with fire codes) and dangerous liquids. This valve may be opened only for the conveyance of contaminated stormwater to treatment.
- Another option for discharge of contaminated stormwater is to pump it from a dead-end sump or catchment to a tank truck or other appropriate vehicle for off-site treatment and / or disposal.

15. BMPs for Storage of Liquids in Permanent Above-Ground Tanks

Description of Pollutant Sources.

Above-ground tanks containing liquids (excluding uncontaminated water) may be equipped with a valved drain, vent, pump, and bottom hose connection. They may be heated with steam heat exchangers equipped with steam traps. Leaks and spills can occur at connections and during liquid transfer. Oil and grease, organics, acids, alkalis, and heavy metals in tank water and condensate drainage can also cause stormwater contamination at storage tanks.

Pollutant Control Approach.

Install secondary containment or a double-walled tank. Slope the containment area to a drain with a sump. Stormwater collected in the containment area may need to be discharged to treatment such as an oil / water separator, or equivalent BMP (3, 4). Add safeguards against accidental release including protective guards around tanks to protect against vehicle or forklift damage and tagging valves to reduce human error. *Tank water and condensate discharges are process wastewater that may need an NPDES Permit.*

Operational BMPs.

- Inspect the tank containment areas regularly to identify problem components such as fittings, pipe connections, and valves, for leaks / spills, cracks, corrosion.
- Place adequately sized drip pans beneath all mounted taps and drip / spill locations during filling / unloading of tanks. Valved drain tubing may be needed in mounted drip pans.
- Sweep and clean the tank storage regularly, if paved.
- Replace or repair tanks that are leaking, corroded, or otherwise deteriorating.
- All installations shall comply with the Uniform Fire Code and the National Electric Code.

Structural Source Control BMPs.

- Locate permanent tanks in impervious (Portland cement concrete or equivalent) secondary containment surrounded by dikes as illustrated in Figure F.11, or UL approved double-walled tanks. The dike must be of sufficient height to provide a containment volume of either 10 percent of the total enclosed tank volume or 110 percent of the volume contained in the largest tank, whichever is greater, or, if a single tank, 110 percent of the volume of that tank.
- Slope the secondary containment to drain to a dead-end sump (optional), or equivalent, for the collection of small spills.
- Include a tank overfill protection system to minimize the risk of spillage during loading.

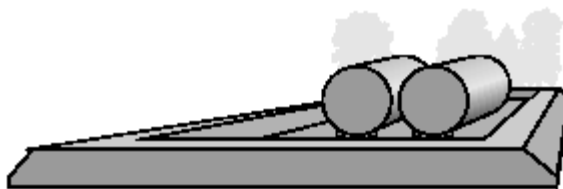


Figure F.11: Above-ground Tank Storage

Treatment BMPs, if required.

If the tank containment area is uncovered, equip the outlet from the spill-containment sump with a shutoff valve, which is normally closed and may be opened, manually or automatically, to convey contaminated stormwater to approved treatment or disposal, or to convey uncontaminated stormwater to a storm drain. Evidence of contamination can include the presence of visible sheen, color, or turbidity in the runoff, or existing or historical operational problems at the facility. Use pH paper or meter for testing areas subject to acid or alkaline contamination.

Required Treatment BMP at Petroleum Tank Farms.

Convey stormwater contaminated with floating oil or debris in the contained area through an API or CP-type oil / water separator (3) or other approved treatment prior to discharge to storm drain or surface water.

16. BMPs for Outside Storage or Transfer of Solid Raw Mater Finished Products

Description of Pollutant Sources.

Solid raw materials, by-products, or products such as gravel, sand, salts, topsoil, compost, logs, sawdust, wood chips, lumber and other building materials, concrete, and metal products sometimes are typically stored outside in large piles, stacks, etc. at commercial or industrial establishments. Contact of outside bulk materials with stormwater cause leachate, and erosion of the stored materials. Contaminants include TSS, BOD, organics, and dissolved salts (sodium, calcium, and magnesium chloride, etc.).

Pollutant Control Approach.

Provide impervious containment with berms, dikes, etc., and / or cover to prevent run-on and discharge of leachate pollutant(s) and TSS.

Operational BMPs.

- Do not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or to a receiving water.
- Sweep paved storage areas regularly for collection and disposal of loose solid materials.

Structural Source Control BMP Options.

Choose one or more of the source control BMP options listed below for stockpiles greater than five cubic yards of erodible or water soluble materials such as soil, road deicing salts, compost, unwashed sand and gravel, and sawdust. Also included are outside storage areas for solid materials such as logs, bark, lumber, metal products, etc.

- Store in a building or paved and bermed covered area as shown in Figure F.12, or,
- Place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent) over the material as illustrated (see Figure F.13), or
- Pave the area and install a stormwater drainage system. Place curbs or berms along the perimeter of the area to prevent the run-on of uncontaminated stormwater and to collect and convey runoff to treatment. Slope the paved area in a manner that minimizes the contact between stormwater (e.g., pooling) and leachable materials in compost, logs, bark, wood chips, etc.
- For large stockpiles that cannot be covered, implement containment practices at the perimeter of the site and at any catch basins as needed to prevent erosion and discharge of the stockpiled material offsite or to a storm drain. Ensure that

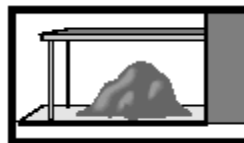


Figure F.12: Covered Storage Area for Bulk Solids (include berm if needed)

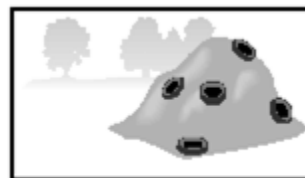


Figure F.13: Material Covered with Plastic Sheeting

contaminated stormwater is not discharged directly to catch basins without conveying through a treatment BMP.

Treatment BMP, if required.

Convey contaminated stormwater from the stockpile area to a wet pond, wet vault, settling basin, media filter, or other appropriate treatment system depending on the contamination.

17. BMPs for Washing and Steam Cleaning Vehicles / Equipment / Building Structures

Description of Pollutant Sources.

Washwater from cleaning activities can contain oil and grease, suspended solids, heavy metals, soluble organics, soaps, and detergents that can contaminate stormwater.

Pollutant Control Approach.

The preferred approach to separate the uncontaminated stormwater from the pollutant sources is to cover and / or contain the cleaning activity, or conduct the activity inside a building. Wash water must be conveyed to industrial treatment or a sanitary sewer after approval by the Wastewater Treatment Plant Operator; temporarily stored before proper disposal; or recycled, with no discharge to the ground, to a storm drain, or to surface water. Washwater may be discharged to the ground after proper treatment in accordance with *Ecology guidance WQ-95-056, "Vehicle and Equipment Washwater Discharges," June 1995*. The quality of any discharge to the ground after proper treatment must comply with Ecology's Ground Water Quality Standards, Chapter 173-200 WAC. Contact the local Ecology regional office for an NPDES Permit application for discharge of washwater to surface water or to a storm drain after on-site treatment.

Structural Source Control BMPs

- Conduct vehicle / equipment washing in a building or under a roof, with washwater draining to industrial treatment facility of a sanitary sewer, if approved by the Wastewater Treatment Plant Operator.
- Conduct outside washing operation in a designated wash area as follows:
 - Conduct washing on a paved spill containment pad to prevent the run-on of stormwater from adjacent areas. Slope the spill containment area so that washwater is collected in a containment pad drain system with perimeter drains, trench drains, or catchment drains. Size the containment pad to extend out a minimum of four feet on all sides of the vehicles and / or equipment being washed.
 - Convey the washwater to a sump (like a grit separator) and then to a sanitary sewer (if allowed by the Wastewater Treatment Plant Operator), or industrial wastewater treatment, or recycle system. An NPDES permit would be required for any washwater discharge to a storm drain or receiving water after treatment. Contact the Ecology regional office for NPDES Permit requirements.
 - For discharge to a sanitary sewer, the containment sump must have a positive control outlet valve for spill control with live containment volume and oil/water separation. Size the minimum live storage volume to contain the maximum expected daily washwater flow plus the sludge storage volume below the outlet pipe. The out valve will be shut during the washing cycle to collect the washwater in the sump. The valve should remain shut for at least two hours following the washing operation to allow the oil and solids to separate before discharge to a sanitary sewer. (See Ecology Publication WQ-95-056). The inlet valve could be closed when washing is not occurring, thereby preventing the entry of uncontaminated stormwater into the pretreatment / conveyance system). Post signs to inform operating personnel of operation and purpose of the valve. Clean the concrete pad thoroughly until there is no foam or visible sheen in the washwater prior to closing the inlet valve and allowing uncontaminated stormwater to bypass (overflow and drain off) the pad (Figure F.14).

- For uncovered wash pads, the positive control outlet valve may be manually operated, but an automatic pneumatic or electric valve system is preferable. The valve may be on a timer circuit to be opened on completion of a wash cycle. The timer would then close the valve after the sump or separator is drained (Figure F.14).
- Because soluble / emulsifiable detergents can be used in the wash medium, the selection of soaps and detergents and treatment BMPs should be considered carefully. *Oil / water separators are ineffective in removing emulsified or water soluble detergents.*

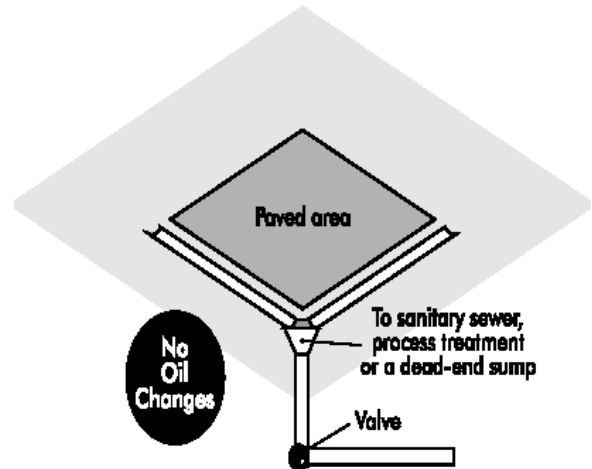


Figure F.14: Uncovered Wash